

## Six-Phase Soil Heating

(OST Ref. No. 5)

This technology uses low-frequency electricity delivered to six electrodes in a circular array to heat soils/groundwater as an in situ technology for removing volatile organic contaminants from permeable soils/groundwater. With SPSH, the temperature of the soil/groundwater and contaminant is increased, thereby increasing the contaminant's vapor pressure and its removal rate. SPSH also creates an in situ source of steam to strip contaminants. The steam serves two important purposes. First, its physical action drives contaminants out that tend to 'lock in' the contaminants. Second, the steam acts as a carrier gas for the contaminants, enabling the contaminants to be swept out into a vacuum vent.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Chicago, Skokie Manufacturing Facility

**Project Name:** Skokie Manufacturing Facility, Chicago, IL (non-DOE)

**Date of Deployment:** June 1998

**Technology User:**

- Current Environmental Solutions
- Lucent Technologies

**Deployment Value/Impact:** Six-Phase Soil Heating enhances soil vapor extraction by heating soil/groundwater to increase contaminant vapor pressure. Six-phase alternating current to applies six electrodes surrounding a central vent, each electrode receiving a single phase. Resistive heating dissipates the electrical energy in the contaminated zone and vapor is withdrawn from the central vent. Six-phase current is effective because it provides better conductivity than conventional three-phase current. Of special note, this application was funded by an anonymous Fortune 100 company; remediated at \$32/cu yd. The below funding data applies to all DOE-funded applications.

**Point of Contact:**

**User Program POC:**

- David Fleming (Current Environmental Solutions) - Tel. (425)603-9036
- Brett Trowbridge (Lucent Technologies) - Tel. (714) 252-8900

**OST Program POC:**

James Wright (DOE-SR) - Tel. (803) 725-5608

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

Lucent Technologies

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$1,958

**Other Deployments:**

- Demonstrated (type: Unknown) in FY 1996 at Niagara Falls Municipal Airport (Niagara Falls Municipal Airport) in Niagara Falls, NY
- Demonstrated (type: Full-Scale) in FY 1994 at Savannah River Site (M Area Process Sewer; Integrated Demonstration Site) in Aiken, SC
- Demonstrated (type: Full-Scale) in FY 1993 at Hanford Site (300 Area) in Richland, WA

## In Well Vapor Stripping

(OST Ref. No. 6)

In-Well Vapor Stripping employs a combination of air-lift pumping and aeration within the borehole to strip volatile organic contaminants from the ground water. The water inside the wellbore is aerated by injecting air at the base of the wellbore, creating a turbulent frothing action. The rising air bubbles strip dissolved contaminants from the water and carry them in a vapor stream to the surface where they are treated.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Mound, OH

**Project Name:** OH-MB-08 / Soils

**Date of Deployment:** August 1998

**Technology User:** DOE-OH, EM-40

**Deployment Value/Impact:** As an in situ method targeting the VOC plumes the benefits include a small footprint, little impact on the groundwater regime, and a protected shortening of remediation duration.

**Point of Contact:**

**User Program POC:**

Doug Maynor (DOE-OH) Tel. (937)-865-3986

**OST Program POC:**

Elizabeth Phillips (DOE-OR) Tel. 423-241-6172

### TECHNOLOGY DEVELOPMENT INFORMATION

#### Major Developers:

- EG&G Environmental
- Stanford University
- Pacific Northwest National Laboratory
- NOVOC's, Inc.

#### Funding Information: (\$ in Thousands):

Total Estimated Funding: \$8,031

#### Other Deployments:

- Deployed (type: DOE) in FY 1996 at Edwards Air Force Base in Rosamond, CA
- Deployed (type: DOE) in FY 1997 at Brookhaven National Laboratory in Upton, NY
- Deployed (type: DOE) in FY 1997 at Savannah River Site (South A&M Area Ground Water Plume) in Aiken, SC
- Deployed (type: Non-DOE) in FY 1997 at Otis AFB in Cape Cod, MA

## Passive Reactive Barrier

(OST Ref. No. 46)

A passive, reactive barrier system uses trench and guidebox construction techniques to install continuous high-density polyethylene (HDPE) vertical barriers below grade. The HDPE barriers can be installed and combined with a groundwater recovery system and barrier pass-through to produce an interceptor well. The interceptor well consists of a 300-foot long by 30-foot deep HDPE barrier to intercept the contaminant plumes with an upgradient gravel pack and multiple horizontal and vertical well screens to recover the plume.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Oak Ridge, Y-12

**Project Name:** OR-42102 Y-12 Bear Creek Remedial Action

**Date of Deployment:** November-December 1997 **Technology User:** Bechtel-Jacobs Corp.

**Deployment Value/Impact:** The technology is being used to treat groundwater contaminated with uranium, nitrate, VOCs and Tc-99 before it discharges to Bear Creek. Passive operation greatly reduces the significant operations and maintenance costs of decades-long pumping and treating, reducing risks associated with surface handling and treating, and may enable sites to achieve regulatory closure sooner because long pump and treat programs are avoided. Full scale deployment at this site will be necessary to determine specific benefit data on this technology.

**Point of Contact:**

**User Program POC:**

Elizabeth Phillips (DOE-OR) Tel. 423-241-6172

**OST Program POC:**

James A. Wright (DOE-SR) Tel. 803-725-5608

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

University of Waterloo has patent on Funnel and Gate technology; ORNL is developing methods to remove uranium and other inorganics

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$7,163

**Other Deployments:**

Deployed in FY 1998 at Rocky Flats in Denver, CO

## Passive Reactive Barrier

(OST Ref. No. 46)

A passive, reactive barrier system uses trench and guidebox construction techniques to install continuous high-density polyethylene (HDPE) vertical barriers below grade. The HDPE barriers can be installed and combined with a groundwater recovery system and barrier pass-through to produce an interceptor wall. The interceptor wall consists of a 300-foot long by 30-foot deep HDPE barrier to intercept the contaminant plumes with an upgradient gravel pack and multiple horizontal and vertical well screens to recover the plume.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Rocky Flats Environmental Technology Site, Golden, CO

**Project Name:** RF-001 Buffer Zone Closure Project

**Date of Deployment:** July 1998 - ongoing      **Technology User:** Kaiser Hill

**Deployment Value/Impact:** Barrier installed to treat VOCs and radionuclide containing groundwater plume generated by leaking drums formerly buried at the Mound Site disposal trench. The installed barrier is approximately 250' long and 15-20' deep. This deployment offers groundwater treatment with greatly reduced O&M costs when compared to conventional Pump-and-Treat options. It also fulfills a FY99 regulatory milestone for remedial action of the Mound Site plume 'for the protection of surface water'.

**Point of Contact:**

**User Program POC:**

Gary Huffman (DOE-RF) tel: 303-966-7490

**OST Program POC:**

Scott McMullin (DOE-SR) Tel. (803)725-9596

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

Sandia National Laboratory; MSE Technology Applications, Inc.

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$7,163

**Other Deployments:**

Deployed in FY 1998 at Oak Ridge (Y-12) in Oak Ridge, TN

## Frozen Soil Barrier

(OST Ref. No. 51)

The technology of using refrigeration to freeze soils has been employed in large-scale engineering projects for a number of years. This technology bonds soils to give load-bearing strength during construction; to seal tunnels, mine shafts, and other subsurface structures against flooding from groundwater; and to stabilize soils during excavation. Examples of modern applications include several large, highway, and water supply tunnels. Ground freezing to form subsurface frozen soil barriers is an innovative technology designed to contain hazardous and radioactive contaminants in soils and groundwater. Frozen soil barriers that provide complete containment ('V configuration) are formed by drilling and installing refrigerant piping (on 8-ft centers) horizontally at approximately 45o angles for sides and vertically for ends and then recirculating an environmentally safe refrigerant solution through the piping to freeze the soil porewater. Freeze plants are used to keep the containment structure at subfreezing temperatures. Advantages for this technology include the following: -It can provide complete containment. -It used benign material (water/ice) as a containment medium. -Frozen barriers can be removed (by thawing). -Frozen barriers can be repaired in situ (by injecting water into the leakage area).

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Oak Ridge, ORNL Homogeneous Reactor Pond

**Project Name:** OR-43202 ORNL Homogeneous Reactor Experiment Pond (WAG9)

**Date of Deployment:** October 1997

**Technology User:** BJC, Oak Ridge

**Deployment Value/Impact:** The Frozen Soil Barrier installed at WAG9 is an interim measure to contain Sr90 and Cs137 that reside at the bottom of disposal pond. The containment is designed to keep ground water from mobilizing the contaminants, until a permanent disposal resolution is taken. In general, Frozen Soil Barrier is an in situ containment technology that can be rapidly installed and removed. It minimizes secondary waste, excavation, dust generation, and worker health risk. Breaches in the barrier can be easily repaired by injecting water into the breached area. It uses a benign material (water) as the containment medium. For high-mobility contaminants such as tritium, it may provide the only practical containment measure.

**Point of Contact:**

**User Program POC:**

Mrs. Elizabeth Phillips (DOE-OR) - Tel. 423-241-6172

**OST Program POC:**

James Wright (DOE-SR) Tel. 803-725-5608

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

RKK Freezwall, Arctic Foundations, Inc.

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$5,178

**Other Deployments:**

Deployed (type: DOE) in FY 1997 at Oak Ridge (ORNL Homogeneous Reactor Experiment Pond (WAG9)) in Oak Ridge, TN

## Deep Soil Mixing

(OST Ref. No. 54)

Deep Soil Mixing is a soil treatment technique that can be used to destroy organic contaminants in low permeability soil. In this process soil is mixed, using an auger system, and treatment chemicals are then blended into the soil column. The treatment processes which can be used with this technique include the injection of bioremediation nutrients and bacterial cultures, vapor extraction, which is accomplished by injecting air into the soil and capturing the off-gas in an extraction hood placed over the mixed area, and the injection of metallic iron powder which destroys chlorinated organic compounds.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Argonne National Lab, 317 Area French Drain

**Project Name:** CH-ANLRA; 317 Area French Drain

**Date of Deployment:** January 1998

**Technology User:** Argonne National Laboratory

**Deployment Value/Impact:** At ANL-E, the deep soil mixing process is being used to remove VOCs (carbon-tetrachloride, TCE, PCE and chloroform) from high-clay content glacial till. The soil is mixed employing a dual auger system, while steam and hot air are being injected into the soil column. The steam and hot air carry the VOCs to the surface where they are captured on activated carbon. This reduces contaminant concentration from over 300 ppm to less than 10 ppm. The soil mixing equipment is also used to inject metallic iron particles which provides treatment of residual VOC contaminants. A total of approximately 6,200 cubic yards will have been treated upon project completion by mid 1998.

**Point of Contact:**

**User Program POC:**

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**OST Program POC:**

James Wright (DOE-SR) Tel. 803-725-5608

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

- In-Situ Fixation Inc.
- Argonne National Laboratory-East
- GeoCon Inc.

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$509

**Other Deployments:**

Deployed (type: DOE) in FY 1992 at Portsmouth Gaseous Diffusion Plant (X-231B Site (waste oils and solvents)) in Portsmouth, OH

## Direct Measurement of Strontium-90 in Subsurface Soils

(OST Ref. No. 70)

This technique is used to characterize potentially contaminated surface soils having beta emitting radionuclides or daughter products in the decay chain. The BetaScint(TM) instrument uses multiple layers of coated optical fiber to measure nuclear radiation. It employs coincidence techniques to obtain high-resolution measurements of high-energy beta particle radiation while eliminating cosmic radiation and other forms of background radiation. Such high-energy beta particle radiation sources include strontium-90 and uranium-238, which are found in soils at some DOE sites. The viewing depth of this detector is 3-5 mm.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Laboratory for Energy-Related Health Research (LEHR) Site at the University of California at Davis

**Project Name:** LEHR Environmental Restoration OAK-010

**Date of Deployment:** June - August 1998      **Technology User:** Weiss Associates

**Deployment Value/Impact:** Aided in real-time completion of remedial actions at the sites. Reduced number of verification samples required. Around 33% cost reduction (~\$250K).

**Point of Contact:**

**User Program POC:**

Kim Abbott, DOE-OK, 510-637-1501

**OST Program POC:**

Dirk Schmidhofer, DOE-NV, 702-295-0159

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

Pacific Northwest National Laboratory, BetaScint (TM)

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$575

**Other Deployments:**

- 1994 at SLAPS (St. Louis Airport) in St. Louis, MO
- 1995-6 at ITRI (Inhalation Toxicology Research Institute at Kirtland AFB) in Albuquerque, NM

## Pipe Explorer (TM) System

(OST Ref. No. 74)

The Pipe Explorer system, developed by Science and Engineering Associates, Inc.(SEA), under contract with the U.S. Department of Energy (DOE) Morgantown Energy Technology Center, has been used to transport various characterizing sensors into piping systems that have been radiologically contaminated. DOE's nuclear facility decommissioning program must characterize radiological contamination inside piping systems before the pipe can be recycled, remediated, or disposed. The Pipe Explorer can be deployed through constrictions in the pipe, around 90° bends, vertically up and down, and in slippery conditions. Because the detector is transported inside the membrane, which is inexpensive and disposable, it is protected from contamination, which eliminates cross-contamination and false readings. Characterization sensors that have been demonstrated with the system thus far include: alpha, beta, and gamma detectors, video cameras, and pipe locators. Alpha measurement capability has been developed and will be demonstrated soon. The system is capable of deploying in pipes as small as 2-in. diameter and up to 250-ft long.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Portland Gas and Electric Trojan Nuclear Plant

**Project Name:** Portland Gas and Electric Decontamination and Decommissioning

**Date of Deployment:** November 1997      **Technology User:** Portland Gas and Electric

**Deployment Value/Impact:** Pipe Explorer provided non-intrusive characterization of pipes at the Portland Gas and Electric Nuclear Power Plant D&D project. This avoids the costly removal of pipes that are not contaminated, and therefore do not require removal.

**Point of Contact:**

**User Program POC:**

- C. David Cremer (Science & Engineering Associates, Inc.) Tel. (505) 884-2300
- Mr. Jack Ricardo (Portland General Electric) - Tel. 503-556-7833

**OST Program POC:**

C.Eddie Christie, DOE-FETC (304) 285-4604

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

- Science and Engineering Associates, Inc., Santa Fe, NM
- OST Industry Programs, FETC

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$1,224

**Other Deployments:**

- Deployed (type: DOE) in FY 1995 at FUSRAP (General Motors Adrian Plant) in Adrian, MI
- Deployed (type: DOE) in FY 1996 at Grand Junction Project Office (Grand Junction Site) in Grand Junction, CO
- Deployed (type: DOE) in FY 1997 at Mound (Mound Site) in Miamisburg, OH
- Deployed (type: DOE) in FY 1997 at Argonne National laboratory (CP-5 Reactor) in Chicago, IL
- Deployed (type: Non-DOE) in FY 1998 at Crystal River (Crystal River Nuclear Power Plant) in Crystal River, FL
- Deployed (type: DOE) in FY 1996 at Inhalation Toxicology Research Institute (ITRI) in Albuquerque, NM



## Pipe Explorer (TM) System

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The Pipe Explorer system, developed by Science and Engineering Associates, Inc.(SEA), under contract with the U.S. Department of Energy (DOE) Federal Energy Technology Center, has been used to transport various characterizing sensors into piping systems that have been radiologically contaminated. DOE's nuclear facility decommissioning program must characterize radiological contamination inside piping systems before the pipe can be recycled, remediated, or disposed. The Pipe Explorer can be deployed through constrictions in the pipe, around 90° bends, vertically up and down, and in slippery conditions. Because the detector is transported inside the membrane, which is inexpensive and disposable, it is protected from contamination, which eliminates cross-contamination and false readings. Characterization sensors that have been demonstrated with the system thus far include: alpha, beta, and gamma detectors, video cameras, and pipe locators. Alpha measurement capability has been developed and will be demonstrated soon. The system is capable of deploying in pipes as small as 2-in. diameter and up to 250-ft long.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Crystal River, Crystal River Nuclear Power Plant

**Project Name:** Crystal River Nuclear Power Plant Decontamination and Decommissioning

**Date of Deployment:** November 1997

**Technology User:** Crystal River Nuclear Power Plant, Crystal River, FL

**Deployment Value/Impact:** Pipe Explorer provided non-intrusive characterization of pipes at the Crystal River Nuclear Power Plant D&D project. This avoids the costly removal of pipes that are not contaminated, and therefore do not require removal.

**Point of Contact:**

**User Program POC:**

C. David Cremer (Science & Engineering Associates, Inc.) (505) 884-2300

**OST Program POC:**

Robert C. Bedick, DOE-FETC (304) 285-4505

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

- Science and Engineering Associates, Inc.
- OST Industry Programs

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$1,224

**Other Deployments:**

- Deployed (type: DOE) in FY 1995 at FUSRAP (General Motors Adrian Plant) in Adrian, MI
- Deployed (type: DOE) in FY 1996 at Grand Junction Project Office (Grand Junction Site) in Grand Junction, CO
- Deployed (type: DOE) in FY 1997 at Mound (Mound Site) in Miamisburg, OH
- Deployed (type: Non-DOE) in FY 1998 at Portland Gas and Electric Trojan Nuclear Plant (Portland Gas and Electric Trojan Nuclear Plant) in Portland, OR
- Deployed (type: DOE) in FY 1997 at Argonne National laboratory (CP-5 Reactor) in Chicago, IL
- Deployed (type: DOE) in FY 1996 at Inhalation Toxicology Research Institute (ITRI) in Albuquerque, NM

## Light Duty Utility Arm

(OST Ref. No. 85)

The light duty utility arm (LDUA) and the Modified LDUA (MLDUA) enables remote deployment and operation of in situ surveillance, confined sluicing, inspection, and waste analysis tools, called end-effectors, to multiple, in-tank positions using a robotic manipulator arm mounted on a telescoping mast. The arm can access radioactive waste storage tanks through existing 12-inch or larger diameter risers in tank domes.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Oak Ridge, GAAT Tank W-6

**Project Name:** OR-43203, Bethel Valley Remedial Action, Gunitite and Associated Tanks Treatability Study (GAATTS)

**Date of Deployment:** April 1998

**Technology User:** Lockheed Martin Energy Systems

**Deployment Value/Impact:** Under the GAATTS, Oak Ridge is removing sufficient waste from tanks to allow the tanks to be closed and enable progress on the restoration of the Bethel Valley watershed. The modified light duty utility arm provides remote retrieval capability.

**Point of Contact:**

**User Program POC:**

Jacquie Noble-Dial, DOE-OR, (423) 241-6184

**OST Program POC:**

Ted Pietrok, DOE-RL, (509) 372-4546

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

- Westinghouse Hanford Company
- SPAR Aerospace
- Pacific Northwest National Laboratory
- Sandia National Laboratory
- Idaho National Engineering and Environmental Laboratory
- Oak Ridge National Laboratory

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$25,940

**Other Deployments:**

- FY 1996, Hanford, Tank T-106
- FY 1997, Oak Ridge, GAAT Tank W-3
- FY 1998, Oak Ridge, GAAT Tank W-4

## Light Duty Utility Arm

(OST Ref. No. 85)

The light duty utility arm (LDUA) and Modified LDUA (MLDUA) enables remote deployment and operation of in situ surveillance, confined sluicing, inspection, and waste analysis tools, called end-effectors, to multiple, in-tank positions using a robotic manipulator arm mounted on a telescoping mast. The arm can access radioactive waste storage tanks through existing 12-inch or larger diameter risers in tank domes.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Oak Ridge, GAAT, Tank W-4

**Project Name:** OR-43203, Bethel Valley Remedial Action, Gunitite and Associated Tanks Treatability Study (GAATTS)

**Date of Deployment:** November 1997

**Technology User:** Lockheed Martin Energy Systems

**Deployment Value/Impact:** Under the GAATTS, Oak Ridge is removing sufficient waste from tanks to allow the tanks to be closed and enable progress on the restoration of the Bethel Valley watershed. The modified light duty utility arm provides remote retrieval capability.

**Point of Contact:**

**User Program POC:**

Jacque Noble-Dial, DOE-OR, (423) 241-6184

**OST Program POC:**

Ted Pietrok, DOE-RL, (509) 372-4546

### TECHNOLOGY DEVELOPMENT INFORMATION

#### Major Developers:

- Westinghouse Hanford Company
- SPAR Aerospace
- Pacific Northwest National Laboratory
- Sandia National Laboratory
- Idaho National Engineering and Environmental Laboratory
- Oak Ridge National Laboratory

#### Funding Information: (\$ in Thousands):

Total Estimated Funding: \$25,940

#### Other Deployments:

- FY 1996, Hanford, Tank T-106
- FY 1997, Oak Ridge, GAAT Tank W-3
- FY 1998, Oak Ridge, GAAT Tank W-6

## In Situ Permeable Flow Sensor

(OST Ref. No. 99)

Groundwater and soil gas flow sensors are a new technology for measuring directly the full 3-dimensional fluid flow velocity vector at essentially a single point in porous media. Each probe consists of a rod approximately 30 inches long by 2 inches in diameter, fabricated of low thermal conductivity polyurethane foam. Deployed on the surface of the rod are a thin-film, flex circuit style heater and an array of 30 temperature sensors (thermistors). The probe is buried in the ground at the point where the flow is to be monitored. When the heater is activated, a temporally and spatially uniform heat flux from the probe is established. The direction and magnitude of the full 3-dimensional flow velocity vector can be deduced from the measured temperature distribution on the surface of the probe. Because the heat capacity of a given volume of air is much less than that of the same volume of water, the probes can measure air flow velocity in dry sediments. A critical aspect of obtaining reliable data from the flow sensors is the method of deployment. In order to avoid negative impacts on the flow velocity caused by the presence of a borehole, well screen, and gravel pack, the flow sensors must be buried directly in the ground, in intimate contact with the formation. This limits the range of applicability of the technology to sites where the sediments are unconsolidated. Although this deployment strategy means that the relatively inexpensive probes cannot be recovered once deployed, they can be monitored remotely on a continuous basis for long periods of time (months to years).

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Allsup, Alameda Blvd., Albuquerque, New Mexico

**Project Name:** Allsup, Alameda Blvd. (non-DOE)

**Date of Deployment:** Fiscal Year 1998      **Technology User:** Allsup

**Deployment Value/Impact:** The In Situ Permeable Flow Sensor uses a thin cylinder heater buried in the ground to directly measure the direction and magnitude of 3-D groundwater flow in porous aquifers. Temperature distribution on the cylinder surface varies as a function of groundwater flow magnitude and direction. Previous technologies were labor intensive and required that large volumes of contaminated water be pumped to the surface for storage and disposal.

**Point of Contact:**

**User Program POC:**

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**OST Program POC:**

James Wright (DOE-SR) - Tel. (803) 725-5608

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

Sandia National Laboratories

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$2,528

**Other Deployments:**

- Deployed (type: DOE) in FY 1995 at Savannah River Site (M-Area; TNX) in Aiken, SC
- Deployed (type: DOE) in FY 1995 at Hanford (Columbia River at site boundary) in Richland, WA
- Deployed (type: DOE) and Demonstrated (type: Full-Scale) in FY 1995 at Weeks Island (Strategic Petroleum Reserve) in Unknown, LA
- Deployed (type: Unknown) in FY 1996 at Port Hueneme Naval Base (Naval Base) in Port Hueneme, CA

# Neural Network Raman Cone Penetrometer Signal Extraction and Enhancement

(OST Ref. No. 242)

Raman spectroscopy is an inelastic light-scattering technique that identifies specific chemical compounds by their unique spectrum. Raman Spectroscopy is a sensor that can be deployed with the cone penetrometer for in situ detection and speciation of compounds. EIC Laboratories, Inc. and Lawrence Livermore National Laboratories have both designed field-hardened Raman spectrographs using fiber optics that can be implemented in a CPT probe. The probe is unique as it allows for in situ determination of a broad range of chemicals, including DNAPL, for example, TCE or PCE. The Raman system is best used for source zone characterization since it is only sensitive to very high concentration or separate phase contaminants.

## DESCRIPTION OF THE DEPLOYMENT

**Location:** SRS, 3 Areas, 321-Area; C-Area; M-Area

**Project Name:** DNAPL Characterization with a Raman Probe

**Date of Deployment:** May 1998

**Technology User:** Westinghouse  
Savannah River  
Company,  
Environmental  
Restoration Engineering,  
Robert Van Pelt, 803-  
952-6523

**Deployment Value/Impact:** This use of Raman spectroscopy to directly detect the presence of DNAPL (PCE) is the first time that any technology has been able to detect the presence of DNAPL in-situ and to provide information on the specific compound present. The baseline technology for delineation of DNAPL is collection of samples for laboratory analysis. The use of Raman to delineate source zone boundaries will allow precise definition of the distribution of DNAPL at waste sites in real time that result in optimization of source zone characterization activities and minimization of the number of samples required for laboratory analysis. The data collected during this deployment will be used to support source zone remediation efforts at the 321-M Solvent Storage Site where DNAPL remediation is scheduled for FY99.

**Point of Contact:**

**User Program POC:**  
Donna Ridgely, DOE-SR, 803-725-2688

**OST Program POC:**  
Dirk Schmidhofer, DOE-NV, 702-295-0159

## TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

Lawrence Livermore National Laboratory

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$620

**Other Deployments:**

None

## Waste Inspection Tomography (WIT)

(OST Ref. No. 259)

The Waste Inspection Tomography (WIT) project consists of a trailer-based (mobile), nondestructive evaluation and assay (NDE/NDA) system for inspection of waste drums based on radiographic, tomographic, and spectroscopic principles. The deployment at Nevada Test Site incorporated the capabilities and Gamma-Ray Active & Passive Computed Tomography (A&PCT) technology with WIT to enhance the waste assay capabilities. The A&PCT technology uses two separate gamma-ray measurements during operation to accommodate measurement complications. The first is an active density mapping of the waste drum matrix by an external radioactive source(s) and the second is a passive measurement of the gamma-emitting radioactive source(s). The matrix and radioactive material spatial information determined from the computed tomography reconstruction process is used to arrive at a gamma attenuation corrected assay. Accurate and quantitative radioactivity values can be obtained for radionuclides present in quantities above the detection limit of the system.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Nevada Test Site

**Project Name:** PBS #NV350 / TRU/Mixed TRU, Nevada

**Date of Deployment:** August 1998

**Technology User:** Bechtel-Jacobs Nevada

**Deployment Value/Impact:** WIT had completed NDE/NDA on 187 TRU waste drums as of 12/1/98 at NTS. WIT enables non-invasive characterization without having to open the drums. This results in reduced costs. The data will be used to characterize TRU waste for eventual shipment to WIPP. The use of this technology is anticipated to continue during the TRU waste characterization process.

**Point of Contact:**

**User Program POC:**

Wendy Clayton (DOE-NV) - Tel. (702) 295-5751

**OST Program POC:**

Robert Bedick (DOE-FETC) - Tel. (304) 285-4505

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

Bio-Imaging Research, Inc., Lincolnshire, IL

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$6,209

(Outside Funding: \$130)

**Other Deployments:**

Deployed in FY 1997 at INEEL (RWMC SWEPP (NDE/NDA TRU Drums)) in Idaho Falls, ID

## In Situ Permeability Measurements with Direct Push Techniques

(OST Ref. No. 307)

Science and Engineering Associates (SEA) has developed the Cone Permeameter, a probe for in situ, depth-discrete estimation of permeability in the vadose and saturated zones with high spatial resolution. The probe is deployed using a cone penetrometer truck. The Cone Permeameter field measuring system is based on the pressure response of the subsurface to injection of water or air into the subsurface. The flow rate and resulting pressure profiles are collected and the system calculates the permeability for real-time display.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Savannah River Site, Old Radioactive Waste Burial Ground (OBG), Aiken, SC

**Project Name:** DNAPL Characterization - Cone Permeameter OBG Soil Cover Task

**Date of Deployment:** June 1998

**Technology User:** Westinghouse  
Savannah River  
Company

**Deployment Value/Impact:** The Cone Permeameter provides high resolution, depth discrete measurements of permeability. This information is critical to the design of subsurface remediation systems especially those where zone of capture analysis or flow pathway delineation is relevant. This includes most systems including pump and treat, vapor stripping, in-well vapor stripping, in-situ heating, etc. The baseline for determination of permeability is collection of cores for laboratory analysis of permeability. The SEA Cone Permeameter is significantly faster, cheaper and provides more representative values for the permeability distribution. The results generated in this deployment will be used to optimize design of DNAPL source zone remedial system in A/M area scheduled for FY999 and support for ongoing monitoring of the integrity of the OBG soil cover.

**Point of Contact:**

**User Program POC:**

- Les Germany, DOE-SR, 803-725-8033
- Kathy Lewis, WSRC, 803-952-6532

**OST Program POC:**

Dirk Schmidhofer, DOE-NV, 702-295-0159

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

Science & Engineering Associates (SEA)

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$368

**Other Deployments:**

- 1998 - Savannah River Site, M-Area, Aiken, SC
- 1998 - Savannah River Site, D-Area, Aiken, SC

## In Situ Permeability Measurements with Direct Push Techniques

(OST Ref. No. 307)

Science and Engineering Associates (SEA) has developed the Cone Permeameter, a probe for in situ, depth-discrete estimation of permeability in the vadose and saturated zones with high spatial resolution. The probe is deployed using a cone penetrometer truck. The Cone Permeameter field measuring system is based on the pressure response of the subsurface to injection of water or air into the subsurface. The flow rate and resulting pressure profiles are collected and the system calculates the permeability for real-time display.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Savannah River Site, D-Area Coal Pile Runoff Basin, Aiken, SC

**Project Name:** DNAPL Characterization - Cone Permeameter D-Area Coal Pile Task

**Date of Deployment:** June 1998

**Technology User:** Westinghouse  
Savannah River  
Company

**Deployment Value/Impact:** The Cone Permeameter provides high resolution, depth discrete measurements of permeability. This information is critical to the design of subsurface remediation systems especially those where zone of capture analysis or flow pathway delineation is relevant. This includes most systems including pump and treat, vapor stripping, in-well vapor stripping, in-situ heating, etc. The baseline for determination of permeability is collection of cores for laboratory analysis of permeability. The SEA Cone Permeameter is significantly faster, cheaper and provides more representative values for the permeability distribution. The results generated in this deployment will be used to optimize design of DNAPL source zone remedial system in A/M area scheduled for FY999 and support for ongoing monitoring of the integrity of the OBG soil cover.

**Point of Contact:**

**User Program POC:**

- Les Germany, DOE-SR, 803-725-8033
- Kathy Lewis, WSRC, 803-952-6532

**OST Program POC:**

Dirk Schmidhofer, DOE-NV, 702-295-0159

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

Science & Engineering Associates (SEA)

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$368

**Other Deployments:**

- 1998 at Savannah River Site, OBG Site, Aiken, SC
- 1998 at Savannah River Site, M-Area, Aiken, SC



## In Situ Permeability Measurements with Direct Push Techniques

(OST Ref. No. 307)

Science and Engineering Associates (SEA) has developed the Cone Permeameter, a probe for in situ, depth-discrete estimation of permeability in the vadose and saturated zones with high spatial resolution. The probe is deployed using a cone penetrometer truck. The Cone Permeameter field measuring system is based on the pressure response of the subsurface to injection of water or air into the subsurface. The flow rate and resulting pressure profiles are collected and the system calculates the permeability for real-time display.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Savannah River Site, M-Area, Aiken, SC

**Project Name:** DNAPL Characterization - Cone Permeameter M-Area Task

**Date of Deployment:** May 1998

**Technology User:** Westinghouse  
Savannah River  
Company

**Deployment Value/Impact:** The Cone Permeameter provides high resolution, depth discrete measurements of permeability. This information is critical to the design of subsurface remediation systems especially those where zone of capture analysis or flow pathway delineation is relevant. This includes most systems including pump and treat, vapor stripping, in-well vapor stripping, in-situ heating, etc. The baseline for determination of permeability is collection of cores for laboratory analysis of permeability. The SEA Cone Permeameter is significantly faster, cheaper and provides more representative values for the permeability distribution. The results generated in this deployment will be used to optimize design of DNAPL source zone remedial system in A/M area scheduled for FY999 and support for ongoing monitoring of the integrity of the OBG soil cover.

**Point of Contact:**

**User Program POC:**

- Les Germany, DOE-SR, 803-725-8033
- Kathy Lewis, WSRC, 803-952-6532

**OST Program POC:**

Dirk Schmidhofer, DOE-NV, 702-295-0159

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

Science & Engineering Associates (SEA)

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$368

**Other Deployments:**

- 1998 at Savannah River Site, OBG Site, Aiken, SC
- 1998 at Savannah River Site, D-Area, Aiken, SC

## Colloidal Borescope

(OST Ref. No. 465)

This instrument consists of a charge coupled device camera, an optical magnification lens, an illumination source, and a downhole compass in a watertight stainless steel housing. The borescope is lowered into boreholes to determine the direction of depth-discrete ground-water flow within the borehole. After calibration, the instrument is capable of yielding data that will provide the magnitude of the ground-water flow. The instrument is approximately 60 cm long, with a diameter of 43.4 cm. The electronic image is transmitted to the surface by a cable. The images are viewed on a high resolution monitor and recorded on VHS tape for further analysis. The magnified image corresponds to a 1.0 x 0.4 x 0.1 mm field of view. The flow of ground water in the borehole is quantified by observation of the movement of colloidal particles suspended in the water. Flow direction is determined by comparison with the downhole compass, and velocity by timing the movement of particles across the field of view.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Lawrence Livermore National Lab, LLNL Site 300

**Project Name:** OK-002 Lawrence Livermore National Laboratory (LLNL) - Site 300 Remedial Action

**Date of Deployment:** January 1998

**Technology User:** LLNL

**Deployment Value/Impact:** Allows more accurate real-time ground water flow data, on velocity and speed than traditional pump tests.

**Point of Contact:**

**User Program POC:**

- Elisabeth Reber-Cox (DOE-OAK) Tel. 925.423.6718
- Jon Ziagos (Lawrence Livermore National Laboratory) - Tel. (925) 422-5479

**OST Program POC:**

Elizabeth Phillips (DOE-OR) - Tel. 423-241-6172

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

- LLNL
- DOE-OR

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$235

**Other Deployments:**

- Deployed (type: DOE) in FY 1994 at Lawrence Livermore National Laboratory (Main Site, Site 300) in Livermore, CA
- Deployed (type: DOE) in FY 1992 at Oak Ridge (Paducah, Portsmouth) in ,
- Deployed (type: DOE) in FY 1994 at FEMP in , OH

## Confined Sluicing End Effector

(OST Ref. No. 812)

The Confined Sluicing End Effector (CSEE) uses rotating water jets capable of a range of pressures from 100 pounds per square inch to 35,000 pounds per square inch to cut and dislodge sludge at the bottom of the tank. Using the CSEE, the tank waste sludge can be dislodged, mobilized, and conveyed out of the tank. The water jets can also be used to scarify the tank wall inner surfaces to remove waste scale. The CSEE can be deployed into a tank by either a robotic arm or a retrieval vehicle with a gripper.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** DOE-Oak Ridge, Oak Ridge National Laboratory, Tank W-3

**Project Name:** OR-43203, Bethel Valley Remedial Action, Gunitite and Associated Tanks Treatability Study (GAATTS)

**Date of Deployment:** September 1998      **Technology User:** Lockheed Martin Energy Systems

**Deployment Value/Impact:** Under the GAATTS, Oak Ridge is removing sufficient waste from tanks to allow the tanks to be closed and enable progress on the restoration of the Bethel Valley watershed. Use of the CSEE results in much less water addition than waste retrieval using past-practice sluicing. Minimizing water addition during retrieval reduces the volume of additional waste needing further treatment. This saves money by reducing the storage and disposal of the total volume of waste. Additionally, this reduces the risks associated with retrieval of waste from leaking or potentially leaking tanks.

**Point of Contact:**

**User Program POC:**

Jacquie Noble-Dial, DOE-OR, Tel. (423) 241-6184

**OST Program POC:**

Billie Mauss, DOE-RL, Tel: 509-372-4512

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

- Pacific Northwest National Laboratory
- University of Missouri at Rolla
- Water Jet Inc.

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$1,556

**Other Deployments:**

- FY98 deployment at Oak Ridge (GAAT, Tank W-4) in Oak Ridge, TN
- FY98 deployment at Oak Ridge (GAAT Tank W-6) in Oak Ridge, TN
- FY99 deployment at Oak Ridge Reservation (GAAT Tank W-7) in Oak Ridge, TN

## Confined Sluicing End Effector

(OST Ref. No. 812)

The Confined Sluicing End Effector (CSEE) uses rotating water jets capable of a range of pressures from 100 pounds per square inch to 35,000 pounds per square inch to cut and dislodge sludge at the bottom of the tank. Using the CSEE, the tank waste sludge can be dislodged, mobilized, and conveyed out of the tank. The water jets can also be used to scarify the tank wall inner surfaces to remove waste scale. The CSEE can be deployed into a tank by either a robotic arm or a retrieval vehicle with a gripper.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Oak Ridge, GAAT Tank W-6

**Project Name:** OR-43203, Bethel Valley Remedial Action, Gunitite and Associated Tanks Treatability Study (GAATTS)

**Date of Deployment:** April 1998

**Technology User:** Lockheed Martin Energy Systems

**Deployment Value/Impact:** : Under the GAATTS, Oak Ridge is removing sufficient waste from tanks to allow the tanks to be closed and enable progress on the restoration of the Bethel Valley watershed. Use of the CSEE results in much less water addition than waste retrieval using past-practice sluicing. Minimizing water addition during retrieval reduces the volume of additional waste needing further treatment. This saves money by reducing the storage and disposal of the total volume of waste. Additionally, this reduces the risks associated with retrieval of waste from leaking or potentially leaking tanks.

**Point of Contact:**

**User Program POC:**  
Jacquie Noble-Dial, DOE-OR, (423) 241-6184

**OST Program POC:**  
Ted Pietrok, DOE-RL, (509) 372-4546

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

- Pacific Northwest National Laboratory
- University of Missouri at Rolla
- Water Jet Inc.

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$1,556

**Other Deployments:**

- FY97 deployment at ORNL (GAAT W-3) in Oak Ridge, TN
- FY98 deployment at Oak Ridge (GAAT W-4) in Oak Ridge, TN
- FY99 deployment at Oak Ridge Reservation (GAAT Tank W-7) in Oak Ridge, TN

## Confined Sluicing End Effector

(OST Ref. No. 812)

The Confined Sluicing End Effector (CSEE) uses rotating water jets capable of a range of pressures from 100 pounds per square inch to 35,000 pounds per square inch to cut and dislodge sludge at the bottom of the tank. Using the CSEE, the tank waste sludge can be dislodged, mobilized, and conveyed out of the tank. The water jets can also be used to scarify the tank wall inner surfaces to remove waste scale. The CSEE can be deployed into a tank by either a robotic arm or a retrieval vehicle with a gripper.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Oak Ridge, GAAT, Tank W-4

**Project Name:** OR-43203, Bethel Valley Remedial Action, Gunitite and Associated Tanks Treatability Study (GAATTS)

**Date of Deployment:** November 1997

**Technology User:** Lockheed Martin Energy Systems

**Deployment Value/Impact:** Under the GAATTS, Oak Ridge is removing sufficient waste from tanks to allow the tanks to be closed and enable progress on the restoration of the Bethel Valley watershed. Use of the CSEE results in much less water addition than waste retrieval using past-practice sluicing. Minimizing water addition during retrieval reduces the volume of additional waste needing further treatment. This saves money by reducing the storage and disposal of the total volume of waste. Additionally, this reduces the risks associated with retrieval of waste from leaking or potentially leaking tanks.

**Point of Contact:**

**User Program POC:**

Jacquie Noble-Dial, DOE-OR, (423) 241-6184

**OST Program POC:**

Ted Pietrok, DOE-RL, (509) 372-4546

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

- Pacific Northwest National Laboratory
- University of Missouri at Rolla
- Water Jet Inc.

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$1,556

**Other Deployments:**

- FY1997, Oak Ridge, GAAT Tank W-3
- FY1998, Oak Ridge, GAAT Tank W-6
- FY1999, Oak Ridge, GAAT Tank W-7

## Borehole Miner

(OST Ref. No. 1499)

The Borehole Miner is a waste retrieval technology that uses a water jet to mobilize waste for pumping. The system uses an extendible nozzle to dislodge and mobilize tank waste for removal by an in-tank retrieval pump. The water jet can produce pressures from 500 to 3,000 pounds per square inch with flow rates of 20 to 200 gallons per minute. The nozzle can be remotely extended and angled from a horizontal to near vertical position and can be rotated about the mast, enabling thorough cleaning of the tank surfaces.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Oak Ridge Old Hydrofracture Facility Tank T-2

**Project Name:** OR-43202, Bethel Valley Remedial Action, Old Hydrofracture Tanks

**Date of Deployment:** July 15-16, 1998      **Technology User:** Lockheed Martin Energy Systems

**Deployment Value/Impact:** The objective of this deployment was to safely transfer sludge and supernatant to secure storage and to demonstrate the Borehole Miner's applicability to DOE's underground storage tank remediation. The waste will be processed as part of the Melton Valley Storage Tanks-Transuranic (MVST-TRU) Waste Treatment and Disposal Project. During a series of five (Oak Ridge Reservation, Old Hydrofracture Facility Tanks T-1, T-2, T-3, and T-4) deployments in June and July of 1998, the Borehole Miner retrieved ~9,000 gallons of sludge and 44,000 gallons of supernatant.

**Point of Contact:**

**User Program POC:**

Jacquie Noble-Dial, DOE-OR, (423) 241-6184

**OST Program POC:**

Ted Pietrok, DOE-RL, (509) 372-4546

### TECHNOLOGY DEVELOPMENT INFORMATION

#### Major Developers:

This technology was developed by Waterjet Technology Inc., Integrated Inc., Pacific Northwest National Laboratory, Oak Ridge National Laboratory, and Esso Petroleum, Ltd.

#### Funding Information: (\$ in Thousands):

Total Estimated Funding: \$1,579

#### Other Deployments:

- 1998 Oak Ridge Reservation, Old Hydrofracture Facility Tank T-1
- 1998 Oak Ridge Reservation, Old Hydrofracture Facility Tank T-3
- 1998 Oak Ridge Reservation, Old Hydrofracture Facility Tank T-4
- 1998 Oak Ridge Reservation, Old Hydrofracture Facility Tank T-9

## Borehole Miner

(OST Ref. No. 1499)

The Borehole Miner is a waste retrieval technology that uses a water jet to mobilize waste for pumping. The system uses an extendible nozzle to dislodge and mobilize tank waste for removal by an in-tank retrieval pump. The water jet can produce pressures from 500 to 3,000 pounds per square inch with flow rates of 20 to 200 gallons per minute. The nozzle can be remotely extended and angled from a horizontal to near vertical position and can be rotated about the mast, enabling thorough cleaning of the tank surfaces.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Oak Ridge, Old Hydrofracture Tank T-4

**Project Name:** OR-43202, Bethel Valley Remedial Action, Old Hydrofracture Tanks

**Date of Deployment:** July 10-14, 1998      **Technology User:** Lockheed Martin Energy Systems

**Deployment Value/Impact:** The objective of this deployment was to safely transfer sludge and supernatant to secure storage and to demonstrate the Borehole Miner's applicability to DOE's underground storage tank remediation. The waste will be processed as part of the Melton Valley Storage Tanks-Transuranic (MVST-TRU) Waste Treatment and Disposal Project. During a series of five (Oak Ridge Reservation, Old Hydrofracture Facility Tanks T-1, T-2, T-3, and T-4) deployments in June and July of 1998, the Borehole Miner retrieved ~9,000 gallons of sludge and 44,000 gallons of supernatant.

**Point of Contact:**

**User Program POC:**

Jacquie Noble-Dial, DOE-OR, (423) 241-6184

**OST Program POC:**

Ted Pietrok, DOE-RL, (509) 372-4546

### TECHNOLOGY DEVELOPMENT INFORMATION

#### Major Developers:

This technology was developed by Waterjet Technology Inc., Integrated Inc., Pacific Northwest National Laboratory, Oak Ridge National Laboratory, and Esso Petroleum, Ltd.

#### Funding Information: (\$ in Thousands):

Total Estimated Funding: \$1,579

#### Other Deployments:

- 1998 Oak Ridge Reservation, Old Hydrofracture Facility Tank T-1
- 1998 Oak Ridge Reservation, Old Hydrofracture Facility Tank T-2
- 1998 Oak Ridge Reservation, Old Hydrofracture Facility Tank T-3
- 1998 Oak Ridge Reservation, Old Hydrofracture Facility Tank T-9

## Borehole Miner

(OST Ref. No. 1499)

The Borehole Miner is a waste retrieval technology that uses a water jet to mobilize waste for pumping. The system uses an extendible nozzle to dislodge and mobilize tank waste for removal by an in-tank retrieval pump. The water jet can produce pressures from 500 to 3,000 pounds per square inch with flow rates of 20 to 200 gallons per minute. The nozzle can be remotely extended and angled from a horizontal to near vertical position and can be rotated about the mast, enabling thorough cleaning of the tank surfaces.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Oak Ridge Reservation, Old Hydrofracture Facility Tank T-9

**Project Name:** OR-43202, Bethel Valley Remedial Action, Old Hydrofracture Tanks

**Date of Deployment:** July 1998

**Technology User:** Lockheed Martin

**Deployment Value/Impact:** The objective of this deployment was to safely transfer sludge and supernatant to secure storage and to demonstrate the Borehole Miner's applicability to DOE's underground storage tank remediation. The waste will be processed as part of the Melton Valley Storage Tanks-Transuranic (MVST-TRU) Waste Treatment and Disposal Project. During a series of five (Oak Ridge Reservation, Old Hydrofracture Facility Tanks T-1, T-2, T-3, and T-4) deployments in June and July of 1998, the Borehole Miner retrieved ~9,000 gallons of sludge and 44,000 gallons of supernatant.

**Point of Contact:**

**User Program POC:**

Jacquie Noble-Dial, DOE-OR, (423) 241-6184

**OST Program POC:**

Ted Pietrok, DOE-RL, (509) 372-4546

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

This technology was developed by Waterjet Technology Inc., Integrated Inc., Pacific Northwest National Laboratory, Oak Ridge National Laboratory, and Esso Petroleum, Ltd.

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$1,579

**Other Deployments:**

- 1998 Oak Ridge Reservation, Old Hydrofracture Facility Tank T-1
- 1998 Oak Ridge Reservation, Old Hydrofracture Facility Tank T-2
- 1998 Oak Ridge Reservation, Old Hydrofracture Facility Tank T-3
- 1998 Oak Ridge Reservation, Old Hydrofracture Facility Tank T-4



## Borehole Miner

(OST Ref. No. 1499)

The Borehole Miner is a waste retrieval technology that uses a water jet to mobilize waste for pumping. The system uses an extendible nozzle to dislodge and mobilize tank waste for removal by an in-tank retrieval pump. The water jet can produce pressures from 500 to 3,000 pounds per square inch with flow rates of 20 to 200 gallons per minute. The nozzle can be remotely extended and angled from a horizontal to near vertical position and can be rotated about the mast, enabling thorough cleaning of the tank surfaces.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Oak Ridge , Old Hydrofracture Tank T-3

**Project Name:** OR-43202, Bethel Valley Remedial Action, Old Hydrofracture Tanks

**Date of Deployment:** June 28-29, 1998      **Technology User:** Lockheed Martin Energy Systems

**Deployment Value/Impact:** The objective of this deployment was to safely transfer sludge and supernatant to secure storage and to demonstrate the Borehole Miner's applicability to DOE's underground storage tank remediation. The waste will be processed as part of the Melton Valley Storage Tanks-Transuranic (MVST-TRU) Waste Treatment and Disposal Project. During a series of five (Oak Ridge Reservation, Old Hydrofracture Facility Tanks T-1, T-2, T-3, and T-4) deployments in June and July of 1998, the Borehole Miner retrieved ~9,000 gallons of sludge and 44,000 gallons of supernatant.

**Point of Contact:**

**User Program POC:**

Jacquie Noble-Dial, DOE-OR, (423) 241-6184

**OST Program POC:**

Ted Pietrok, DOE-RL, (509) 372-4546

### TECHNOLOGY DEVELOPMENT INFORMATION

#### Major Developers:

This technology was developed by Waterjet Technology Inc., Integrated Inc., Pacific Northwest National Laboratory, Oak Ridge National Laboratory, and Esso Petroleum, Ltd.

#### Funding Information: (\$ in Thousands):

Total Estimated Funding: \$1,579

#### Other Deployments:

- 1998 Oak Ridge Reservation, Old Hydrofracture Facility Tank T-1
- 1998 Oak Ridge Reservation, Old Hydrofracture Facility Tank T-2
- 1998 Oak Ridge Reservation, Old Hydrofracture Facility Tank T-4
- 1998 Oak Ridge Reservation, Old Hydrofracture Facility Tank T-9

## Borehole Miner

(OST Ref. No. 1499)

The Borehole Miner is a waste retrieval technology that uses a water jet to mobilize waste for pumping. The system uses an extendible nozzle to dislodge and mobilize tank waste for removal by an in-tank retrieval pump. The water jet can produce pressures from 500 to 3,000 pounds per square inch with flow rates of 20 to 200 gallons per minute. The nozzle can be remotely extended and angled from a horizontal to near vertical position and can be rotated about the mast, enabling thorough cleaning of the tank surfaces.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Oak Ridge, Old Hydrofracture Tank T-1

**Project Name:** OR-43202, Bethel Valley Remedial Action, Old Hydrofracture Tanks

**Date of Deployment:** July 18-19, 1998

**Technology User:** Lockheed Martin Energy Systems

**Deployment Value/Impact:** The objective of this deployment was to safely transfer sludge and supernatant to secure storage and to demonstrate the Borehole Miner's applicability to DOE's underground storage tank remediation. The waste will be processed as part of the Melton Valley Storage Tanks-Transuranic (MVST-TRU) Waste Treatment and Disposal Project. During a series of five (Oak Ridge Reservation, Old Hydrofracture Facility Tanks T-1, T-2, T-3, and T-4) deployments in June and July of 1998, the Borehole Miner retrieved ~9,000 gallons of sludge and 44,000 gallons of supernatant.

**Point of Contact:**

**User Program POC:**

Jacquie Noble-Dial, DOE-OR, (423) 241-6184

**OST Program POC:**

Ted Pietrok, DOE-RL, (509) 372-4546

### TECHNOLOGY DEVELOPMENT INFORMATION

#### Major Developers:

This technology was developed by Waterjet Technology Inc., Integrated Inc., Pacific Northwest National Laboratory, Oak Ridge National Laboratory, and Esso Petroleum, Ltd.

#### Funding Information: (\$ in Thousands):

Total Estimated Funding: \$1,579

#### Other Deployments:

- 1998 Oak Ridge Reservation, Old Hydrofracture Facility Tank T-2
- 1998 Oak Ridge Reservation, Old Hydrofracture Facility Tank T-3
- 1998 Oak Ridge Reservation, Old Hydrofracture Facility Tank T-4
- 1998 Oak Ridge Reservation, Old Hydrofracture Facility Tank T-9

## Pulsed Air

(OST Ref. No. 1510)

Pulsed air mixing uses using large circular plates positioned just above the tank floor. Pipes deliver pulses of air to the center of each plate from commercially available gas pulsing valves. Pulsed air mixing introduces large bubbles into the tank fluid periodically (e.g., once every 15 seconds) instead of small bubbles injected continuously. This technology both suspends solids from the tank floor and maintains those solids in a uniform suspension.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Oak Ridge, Gunite Tank W-9

**Project Name:** OR-43203, Bethel Valley Remedial Action, Gunite and Associated Tanks (GAAT) Treatability Study

**Date of Deployment:** September 1998

**Technology User:** Lockheed Martin Energy Systems

**Deployment Value/Impact:** Oak Ridge is removing sufficient waste from tanks to allow tanks to be closed and further progress the Bethel Valley watershed restoration.

**Point of Contact:**

**User Program POC:**

Jacquie Noble-Dial, DOE-OR, 423-241-6184

**OST Program POC:**

Ted Pietrok, DOE-RL, 509-375-4546

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

- Pulsair Incorporated
- Oak Ridge National Laboratory
- Pacific Northwest National Laboratory
- 

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$1,851

**Other Deployments:**

No Related Deployments information has been defined

## AEA Fluidic Pulse Jet Mixer

(OST Ref. No. 1511)

AEA's Fluidic Pulse Jet Mixer was developed to perform a number of tasks for the nuclear reprocessing industry. These tasks include bulk mixing to maintain the suspension of solids and the blending of process liquids. The mixer can be used to combine a tank's available supernate with the sludge into a slurry that is suitable for pumping. The system uses jet nozzles in the tank coupled to a charge vessel. Then, a jet pump creates a partial vacuum in the charge vessel allowing it to be filled with waste. Next, air pressure is applied to the charge vessel, forcing sludge back into the tank and mixing it with the liquid waste. When the liquid waste contains 10% solids, a batch is pumped out of the the tank.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Oak Ridge, Bethel Valley Evaporator Service Tank W-21

**Project Name:** OR-43202, Bethel Valley Remedial Action, Bethel Valley Evaporator Service Tanks

**Date of Deployment:** December 1997

**Technology User:** Lockheed Martin

**Deployment Value/Impact:** The deployment safely transferred sludge and supernatant to secure storage and to demonstrated the pulse jet mixing technique's applicability to DOE's underground storage tank remediation. The waste will be processed as part of the Melton Valley Storage Tanks-Transuranic (MVST-TRU) Waste Treatment and Disposal Project. The Pulse Jet Mixer retrieved between 80-90% of 6,000-10,000gallons of sludge and supernatant from Tank W-21.

**Point of Contact:**

**User Program POC:**

Jacquie Noble-Dial, DOE-OR, (423) 241-6184

**OST Program POC:**

Ted Pietrok, DOE-RL, (509) 372-4546

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

AEA Technology Inc., Oak Ridge National Laboratory, and Pacific Northwest National Laboratory developed this technology.

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$1,025

**Other Deployments:**

No Related Deployments information has been defined

## Raman Probe

(OST Ref. No. 1544)

Currently, the chemicals in radioactive waste storage tanks are determined by taking a core sample of the tank waste, transporting this sample to a laboratory, and performing chemical analysis. The problems with this method are that it is expensive, time consuming and risky. The Raman Probe can be used in a laboratory hot cell or inside a waste tank (via the cone penetrometer). Raman spectroscopy can be used to identify and measure a large suite of inorganic and organic chemical species.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Savannah River Site, Tank 43

**Project Name:** SR-HL01 H-Tank Farm

**Date of Deployment:** June 1998

**Technology User:** Westinghouse  
Savannah River  
Company

**Deployment Value/Impact:** A cone-penetrometer-deployed Raman probe offers the great advantage of in situ chemical analysis and depth profiling of tank wastes without the prior removal of waste materials, which greatly reduces the risk of contamination due to sample transportation and handling, minimizes exposure of personnel to radioactive contaminants, significantly reduces or eliminates sample waste generation, and provides significant cost savings.

**Point of Contact:**

**User Program POC:**

Tom Gutmann, DOE-SR, (803) 208-7408

**OST Program POC:**

Ted Pietrok, DOE-RL, (509) 372-4546

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

- Lawrence Livermore National Laboratory
- EIC Laboratories, Inc.

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$3,333

**Other Deployments:**

No Related Deployments information has been defined

## Graphite Electrode DC Arc Furnace

(OST Ref. No. 1652)

The objective of this task is demonstration of the graphite electrode DC Arc plasma furnace for the treatment of DOE legacy waste. This task will provide waste process capability data and contaminant fate data over a range of compositions and operating conditions. This data will support the evaluation and design of this thermal treatment technology as well as provide data applicable to the evaluation and design of other thermal treatment technologies. This plasma furnace technology uses DC current and graphite electrodes to create a high temperature plasma arc that is capable of melting contaminated soils and other wastes producing a durable, glassy, final waste forms similar to long-life natural analogues. With this technology, a submerged arc mode of operation is possible taking advantage of a cold cap substantially reduces the evolution of volatile metals.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Albuquerque, Pantex classified waste treated at Richland, Pacific Northwest National Laboratory (PNNL) where Graphite Electrode DC Arc Furnace is located.

**Project Name:** AL-07-06-03 - Plasma Fired Demilitarization and Sanitization of Classified Weapon Components and Volume Reduction of Mixed Waste

**Date of Deployment:** February - June 1998      **Technology User:**

- Pacific Northwest National Laboratory (PNNL)
- Westinghouse Hanford Company

**Deployment Value/Impact:** The Graphite DC Arc system has a high degree of versatility and a wide range of applicability in the waste treatment arena. Relative to competing plasma systems, it is simple, safer to use (no cooling water) and requires less down time (torch replacement).

**Point of Contact:**

**User Program POC:**

Mr. Mark Jackson, DOE-AL, (505) 845-6288

**OST Program POC:**

- Dr. William F. Bonner, PNNL - (509) 372-6263
- Mr. Bill Owca, DOE-ID - (208) 526-1983

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

Pacific Northwest National Laboratory (PNNL)

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$15,064

**Other Deployments:**

None

## DNAPL Bioremediation - RTDF

(OST Ref. No. 1737)

The Bioremediation Working Group of the Remediation Technologies Development Forum is a consortium including General Electric, Beak International, Ciba-Geigy, Dow, DuPont, ICI Americas, Novartis, Zeneca, DOE, the U.S. Air Force and the EPA. Each partner in the consortium brings expertise as well as resources to conduct studies on the effectiveness of bioremediation in degrading contaminants in soil.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** INEEL, Test Area North

**Project Name:** ID-ER-101 Test Area North Remediation

**Date of Deployment:** June 1998

**Technology User:** DOE-ID Environmental Restoration

**Deployment Value/Impact:** Enhanced in situ bioremediation followed by monitored natural attenuation offers five advantages over pump and treat technology typically implemented for groundwater remediation: (1) the remediation time can be significantly shorter because it is not necessary to remove all the contamination to the surface for treatment, (2) in situ treatment does not generate secondary waste streams because contaminants are transformed or immobilized in place, (3) the risk of worker and public exposure to hazardous and radioactive materials is reduced since disposal of secondary waste (carbon filters and ion exchange resins) is not necessary, (4) there is significant cost savings from lower capital costs and reduced operating and maintenance costs, and (5) monitored natural attenuation requires no active intervention other than periodic monitoring, and hence has minimal capital and operating and maintenance costs.

**Point of Contact:**

**User Program POC:**

Lori Fritz (DOE-ID) - Tel. 208-526-1878

**OST Program POC:**

Elizabeth Phillips (DOE-OR) Tel. 423-241-6172

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

- INEEL
- ORNL
- PNNL

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$5,883

**Other Deployments:**

- Deployed (type: DOE) and Demonstrated (type: Unknown) in FY 1998 at Kansas City Plant (Old Ponds Site) in Kansas City, MO
- Deployed (type: DOE) in FY 1997 at Oak Ridge (1070-A Burial Ground) in Oak Ridge, TN
- Deployed (type: DOE) in FY 1998 at Oak Ridge (ETTP Plumes Area) in Oak Ridge, TN

## DNAPL Bioremediation - RTDF

(OST Ref. No. 1737)

The Bioremediation Working Group of the Remediation Technologies Development Forum is a consortium including General Electric, Beak International, Ciba-Geigy, Dow, DuPont, ICI Americas, Novartis, Zeneca, DOE, the U.S. Air Force and the EPA. Each partner in the consortium brings expertise as well as resources to conduct studies on the effectiveness of bioremediation in degrading contaminants in soil.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Dover AFB, National Environmental Technology Test Site

**Project Name:** Dover AFB

**Date of Deployment:** Fiscal Year 1998

**Technology User:** DOE-OR / United States Air Force

**Deployment Value/Impact:** Enhanced in situ bioremediation followed by monitored natural attenuation offers five advantages over pump and treat technology typically implemented for groundwater remediation: (1) the remediation time can be significantly shorter because it is not necessary to remove all the contamination to the surface for treatment, (2) in situ treatment does not generate secondary waste streams because contaminants are transformed or immobilized in place, (3) the risk of worker and public exposure to hazardous and radioactive materials is reduced since disposal of secondary waste (carbon filters and ion exchange resins) is not necessary, (4) there is significant cost savings from lower capital costs and reduced operating and maintenance costs, and (5) monitored natural attenuation requires no active intervention other than periodic monitoring, and hence has minimal capital and operating and maintenance costs.

**Point of Contact:**

**User Program POC:**

- Johnny Moore (DOE-OR) - Tel. (423-476-3536
- Dr. Anthony V. Palumbo (Oak Ridge National Laboratory) - Tel. (423)576-8002
- 

**OST Program POC:**

James Wright (DOE-SR) - Tel. (803) 725-5608

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

An industrial consortium with General Electric, Dow Chemical Company, DuPont, ICI Americas, Ciba-Geigy Corporation, Beak International, Novartis, and Zeneca, Inc. In addition, there were agency sponsors including the EPA, USAF, and DOE. Specific contacts can be obtained at <http://www.rtdf.org/biomember.htm>

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$5,883

**Other Deployments:**

- Demonstrated (type: Small-Scale) in FY 1993 at Savannah River Site (M-Area Settling Basin) in Aiken, SC
- Demonstrated (type: Lab-Scale) in FY 1998 at Kansas City Plant (Old Ponds Site) in Kansas City, MO
- Deployed (type: DOE) in FY 1998 at INEEL (Test Area North) in Idaho Falls, ID
- Demonstrated (type: Lab-Scale) in FY 1997 at Oak Ridge (1070-A Burial Ground) in Oak Ridge, TN
- Demonstrated (type: Lab-Scale) in FY 1998 at Oak Ridge (ETTP Plumes Area) in Oak Ridge, TN



## Steam Vacuum Cleaning

(OST Ref. No. 1780)

The Kelly Steam Vacuum Cleaning Decontamination System is a steam/vacuum cleaning system owned by Container Products Corporation of Wilmington, North Carolina. The system uses the kinetic energy of superheated pressurized water to dislodge surface contaminants from debris. The superheated water is directed through a hand-held spray wand, or any of a series of steam/vacuum cleaning heads that integrate spray nozzles within a hooded vacuum recovery sub-system. The superheated liquid flashes to steam upon contact with the debris. The hood is attached to a powerful vacuum cleaner which effectively picks up the steam and contaminants dislodged by the steam jet. The vacuum is most effective on flat surfaces but hoods with different contours can be used to conform to many surfaces. The waste stream passes through a liquid separator, a demister, and a high efficiency particulate air filter that removes contaminants and discharges clean air to the atmosphere. A detergent may be added to the pressurized water stream to improve washing effectiveness.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Savannah River, 105-P Reactor

**Project Name:** SR-FA20; Reactor Monitoring Project

**Date of Deployment:** Fiscal Year 1998

**Technology User:** Facility  
Decommissioning  
Division

**Deployment Value/Impact:** The Kelly Decontamination System is one of many decontamination tools used by the SRS Decon Facility, housed in the 105-C reactor facility, to decontaminate equipment from other SRS facilities. Most of the equipment is portable and can be taken to other SRS facilities for application. Using a shrouded head, the system was used to remove transferable and some fixed contamination from both the concrete floors and walls in the contaminated area (CA) rollback. Thirteen thousand sq. ft. of concrete floor in the CA rollback have been decontaminated to free release. The system was also used with a spray wand to remove gross transferable contamination from metal surfaces (stainless steel rods) in the disassembly basin. Contaminated area rollbacks reduce PPE requirements and lower S&M costs of shutdown SRS facilities.

**Point of Contact:**

**User Program POC:**

- Mr. Martin Salazar (DOE/SR) - Tel. 803-577-3617
- Ms. Heatherly Dukes (Westinghouse Savannah River Company) - Tel. 803-557-9205

**OST Program POC:**

Mr. Steve Bossart (DOE/FETC) - Tel. 304-285-4643

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

Container Products Corp.

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$160

**Other Deployments:**

- Deployed (type: DOE) in FY 1997 at Savannah River Site (105-C reactor) in Aiken, SC
- Deployed (type: DOE) in FY 1996 at Savannah River Site (105-L Reactor) in Aiken, SC
- Deployed (type: DOE) in FY 1997 at Savannah River Site (105-K reactor) in Aiken, SC

## VecLoader HEPA Vacuum Insulation Removal

(OST Ref. No. 1784)

The VecLoader HEPA VAC, developed by Vector Technologies Ltd., is a self-contained, trailer-mounted vacuum unit that typically is used commercially to evacuate asbestos insulation. The HEPA VAC transports the insulation through a flexible suction hose up to a distance of 1,000 feet. The asbestos insulation and fibers are vacuumed up and captured in a fully-enclosed, negative pressure system sent into a cyclone separator, then bagged. The HEPA VAC is an extremely high-powered system capable of pulling insulation off wall surfaces and is equipped with an automatic shut-off safety valve. This technology was demonstrated as part of the Plant 1 Complex Large Scale Demonstration Project at Fernald.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Fernald, Plant 10A Boiler Plant

**Project Name:** OH-FN-02, Facility D&D

**Date of Deployment:** July 1998

**Technology User:** Foster Wheeler, Inc.

**Deployment Value/Impact:** Foster Wheeler used the Vecloader to remove fly ash from boilers during the decommissioning of the Plant 10A Boiler Plant at Fernald. The system provides increased productivity, minimizes airborne contaminants, reduces PPE requirements, and reduces direct handling of the fly ash by workers during its removal.

**Point of Contact:**

**User Program POC:**

Mr. Bob Danner (DOE-FN) - Tel. 513-648-3167

**OST Program POC:**

Steve Bossart (DOE/FETC) Tel. 304-285-4643

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

Vector Technologies, Ltd.

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$160

**Other Deployments:**

- FY 1996 at Fernald Plant 1
- FY 1998 at Fernald Plant 9

## VecLoader HEPA Vacuum Insulation Removal

(OST Ref. No. 1784)

The technology is owned by Vector Technologies Ltd. Of Milwaukee, Wisconsin. The technology is a self-contained, trailer mounted, vacuum unit that evacuates asbestos fibers. The HEPA VAC operates at a rate of six to nine tons per hour to transport the asbestos fibers through a flexible, 5-inch diameter, smooth bore suction hose up to distances of 1,000 feet. The fibers are captured in this fully enclosed, negative pressure system and sent into a cyclone separator, where it is bagged directly from the vacuum.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Fernald Environmental Management Project, Plant 9

**Project Name:** OH-FN-02, Facility D&D

**Date of Deployment:** July 1998

**Technology User:** NSC Energy Services

**Deployment Value/Impact:** VecLoader was deployed by NSC Energy Services to collect and bag concrete debris generated by a planar scabbling technology under their fixed-priced contract to decontaminate and decommission Plant 9 at Fernald. The VecLoader HEPA-VAC System vacuums the concrete debris into a hose which transports the debris into a dry cyclone separator where the concrete debris is collected and bagged at the bottom of the cyclone separator.

**Point of Contact:**

**User Program POC:**

Mr. Bob Danner (DOE - Fernald) - Tel. (513) 648-3167

**OST Program POC:**

Steve Bossart (DOE/FETC) - Tel. 304-285-4643

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

Vector Technologies, LTD

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$160

**Other Deployments:**

- FY 1996 at Fernald Plant 1
- FY 1998 at Fernald Plant 10A Boiler Plant Bldg

## High Speed Clamshell Pipe Cutter

(OST Ref. No. 1807)

The High-Speed Clamshell Pipe Cutter-Models 616RBL and 624RBL- developed by Tri-Tool, Inc., are lightweight, split frame pipe lathes for severing and/or beveling in-line pipe with a range of 10-in. through 16-in. and 18-in. through 24-in. nominal diameter that require minimal radial and axial clearances. The radial clearance requirement from the walls, floors, or adjacent pipes is 7-in.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Hanford; Richland, WA (105 C-Reactor)

**Project Name:** RL-ER06; Decontamination & Decommissioning

**Date of Deployment:** January 1998

**Technology User:** Bechtel Hanford, Inc.

**Deployment Value/Impact:** Used to cut large-bore piping in the 105-C Reactor Gas and Water Tunnel Areas. This technology eliminates flame and generated smoke thereby, reducing risk to workers. Remote application also reduces worker exposure, helping to improve safety and ALARA.

**Point of Contact:**

**User Program POC:**

- Mrs. Shannon N. Saget (DOE/RL) - Tel. 509-372-4029
- Mr. Jeff Bruggeman (DOE/RL) - Tel. 509-376-7121

**OST Program POC:**

John Duda (DOE/FETC) - Tel. 304-285-4217

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

Tri Tool, Inc.

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$124

**Other Deployments:**

No additional deployments in FY1998

## Reactor Surface Contamination Stabilization

(OST Ref. No. 1839)

The Master Lee coating 'Instacote' can be used contain airborne contaminants, as well as to fix loose surface contaminants. Master-Lee's Instacote TM coating consists of a polyurea film cover. the coating applicator consists of a modified Gusmer Model H-2000 high pressure proportioner that controls the mixture of coating compounds and a Gusmer Model No. GX-7 spray gun for spraying the coating onto the surfaces. Coatings were prepared by mixing two different compounds before the application. The proportion of the compounds are controlled at the high pressure proportioner and delivered to the spray gun via two different hoses.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Savannah River Site, F Area Tanks 25-28 and 44-47

**Project Name:** SR-NM01, SR-HL02, SR-HL09, and SR-HL11; F-Area Stabilization Project, F-Tank Farm, Tank Farm Service Upgrades, and Tank Farm Support Services F Area

**Date of Deployment:** July 1998

**Technology User:** Facility  
Decommissioning  
Division

**Deployment Value/Impact:** Reduces PPE requirements during S&M, thereby reducing cost. Reduces risk to workers and the environment.

**Point of Contact:**

**User Program POC:**

- Ms. Heatherly Dukes (Westinghouse Savannah River Company) - Tel. 803-557-9205
- Mr. Martin Salazar (DOE Savannah River) - Tel. 803-557-3617

**OST Program POC:**

Mr. John Duda (DOE/FETC) - Tel. 304-285-4217

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

Master Lee

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$168

**Other Deployments:**

- Deployed (type: DOE) in FY 1997 at Savannah River Site (105-C Decon Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-C Decon Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Rocky Flats Environmental Technology Site (Room 3559) in Golden, CO
- Deployed (type: DOE) in FY 1998 at Savannah River Site (H Area Tank 15) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (F Area Tanks 17 and 20) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-R Reactor Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-P Reactor Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (E Area Vaults) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (ITP Tank 42) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-C Decon Facility) in Aiken, SC

## Reactor Surface Contamination Stabilization

(OST Ref. No. 1839)

- Deployed (type: DOE) in FY 1998 at Savannah River Site (F Area Test Pump House) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (211 H) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-L Reactor Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-C Decon Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (Old Sand Filter Trench) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-C Decon Facility) in Aiken, SC

## Reactor Surface Contamination Stabilization

(OST Ref. No. 1839)

The Master Lee coating 'Instacote' can be used contain airborne contaminants, as well as to fix loose surface contaminants. Master-Lee's Instacote TM coating consists of a polyurea film cover. the coating applicator consists of a modified Gusmer Model H-2000 high pressure proportioner that controls the mixture of coating compounds and a Gusmer Model No. GX-7 spray gun for spraying the coating onto the surfaces. Coatings were prepared by mixing two different compounds before the application. The proportion of the compounds are controlled at the high pressure proportioner and delivered to the spray gun via two different hoses.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Savannah River Site, 105-C Decon Facility: DI pad stabilization

**Project Name:** SR-FA20; Reactors Monitoring Project

**Date of Deployment:** June - July 1998      **Technology User:** Facility Decommissioning Division

**Deployment Value/Impact:** Master-Lee's Instacoate is being used as one of many D&D tools at the SRS Decon Facility. It is used for contamination rollback to fix contaminants in place on outdoor structures site wide, mainly on reactors and tank farms. Instacoate was chosen for its long term weather durability, and has reduced the necessity of wearing PPEs near these structures/facilities, thus helping reduce costs.

**Point of Contact:**

**User Program POC:**

- Ms. Heatherly Dukes (Westinghouse Savannah River Company) - Tel. 803-557-9205
- Mr. Martin Salazar (DOE Savannah River) - Tel. 803-557-3617

**OST Program POC:**

Mr. John Duda (DOE/FETC) - Tel. 304-285-4217

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

Master Lee

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$168

**Other Deployments:**

- Deployed (type: DOE) in FY 1997 at Savannah River Site (105-C Decon Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-C Decon Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Rocky Flats Environmental Technology Site (Room 3559) in Golden, CO
- Deployed (type: DOE) in FY 1998 at Savannah River Site (H Area Tank 15) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (F Area Tanks 17 and 20) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-R Reactor Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (F Area Tanks 25-28 and 44-47) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-P Reactor Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (E Area Vaults) in Aiken, SC

## Reactor Surface Contamination Stabilization

(OST Ref. No. 1839)

- Deployed (type: DOE) in FY 1998 at Savannah River Site (ITP Tank 42) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (F Area Test Pump House) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (211 H) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-L Reactor Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-C Decon Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (Old Sand Filter Trench) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-C Decon Facility) in Aiken, SC



## Reactor Surface Contamination Stabilization

(OST Ref. No. 1839)

The Master Lee coating 'Instacote' can be used contain airborne contaminants, as well as to fix loose surface contaminants. Master-Lee's Instacote TM coating consists of a polyurea film cover. the coating applicator consists of a modified Gusmer Model H-2000 high pressure proportioner that controls the mixture of coating compounds and a Gusmer Model No. GX-7 spray gun for spraying the coating onto the surfaces. Coatings were prepared by mixing two different compounds before the application. The proportion of the compounds are controlled at the high pressure proportioner and delivered to the spray gun via two different hoses.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Savannah River Site, ITP Tank 40

**Project Name:** SR-HL04; ITP/ESP/LW Operations

**Date of Deployment:** June - July 1998      **Technology User:** Facility  
Decommissioning  
Division

**Deployment Value/Impact:** Reduces PPE requirements during S&M, thereby reducing cost. Reduces risk to workers and the environment.

**Point of Contact:**

**User Program POC:**

- Ms. Heatherly Dukes (Westinghouse Savannah River Company) - Tel. 803-557-9205
- Mr. Martin Salazar (DOE Savannah River) - Tel. 803-557-3617

**OST Program POC:**

Mr. John Duda (DOE/FETC) - Tel. 304-285-4217

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

Master Lee

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$168

**Other Deployments:**

- Deployed (type: DOE) in FY 1997 at Savannah River Site (105-C Decon Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-C Decon Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Rocky Flats Environmental Technology Site (Room 3559) in Golden, CO
- Deployed (type: DOE) in FY 1998 at Savannah River Site (H Area Tank 15) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (F Area Tanks 17 and 20) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-R Reactor Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (F Area Tanks 25-28 and 44-47) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-P Reactor Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (E Area Vaults) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-C Decon Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (F Area Test Pump House) in

## Reactor Surface Contamination Stabilization

(OST Ref. No. 1839)

Aiken, SC

- Deployed (type: DOE) in FY 1998 at Savannah River Site (211 H) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-L Reactor Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-C Decon Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (Old Sand Filter Trench) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-C Decon Facility) in Aiken, SC

## Reactor Surface Contamination Stabilization

(OST Ref. No. 1839)

The Master Lee coating 'Instacote,' originally demonstrated as one of two reactor surface contaminant stabilization technologies at the 105-C Reactor Interim Safe Storage Project, was used at RFETS in conjunction with Capture Coating TM developed by Encapsulation Technologies (California). The coatings can be used to capture and contain airborne contaminants, as well as to fix loose surface contaminants. Master-Lee's Instacote TM coating consists of a polyurea film cover. the coating applicator consists of a modified Gusmer Model H-2000 high pressure proportioner that controls the mixture of coating compounds and a Gusmer Model No. GX-7 spray gun for spraying the coating onto the surfaces. Coatings were prepared by mixing two different compounds before the application. The proportion of the compounds are controlled at the high pressure proportioner and delivered to the spray gun via two different hoses.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Rocky Flats Environmental Technology Site, Room 3559 of Building 371

**Project Name:** RF016; Building 371 Cluster Closure Project

**Date of Deployment:** July 1998

**Technology User:** Kaiser Hill

**Deployment Value/Impact:** At RFETS the Master Lee Instacote and Capture Coating (TM) were used in Room 3559, which contained plutonium nitrate solution processing tanks and was contaminated by leaking acid from past production operations. Through the use of these technologies, contamination in the room was brought down from more than 90,000 derived air concentrations (DAC)--a measure of the concentration of plutonium particles in air--to less than 100 DAC. The process significantly reduces and contains airborne contamination, thereby reducing worker exposure and decreasing the worker crew size requirements.

**Point of Contact:**

**User Program POC:**

- Mr. Gary Huffman (DOE/RF) - Tel. 303-966-7490
- Ms. Gillian Eaton - Tel. 303-966-3060

**OST Program POC:**

John Duda (DOE/FETC) - Tel. 304-285-4217

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

Master Lee

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$168

**Other Deployments:**

- Deployed (type: DOE) in FY 1997 at Savannah River Site (105-C Decon Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-C Decon Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (H Area Tank 15) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (F Area Tanks 17 and 20) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-R Reactor Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (F Area Tanks 25-28 and 44-47) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-P Reactor Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (E Area Vaults) in Aiken, SC

## Reactor Surface Contamination Stabilization

(OST Ref. No. 1839)

- Deployed (type: DOE) in FY 1998 at Savannah River Site (ITP Tank 42) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-C Decon Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (F Area Test Pump House) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (211 H) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-L Reactor Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-C Decon Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (Old Sand Filter Trench) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-C Decon Facility) in Aiken, SC

## Reactor Surface Contamination Stabilization

(OST Ref. No. 1839)

The Master Lee coating 'Instacote' can be used contain airborne contaminants, as well as to fix loose surface contaminants. Master-Lee's Instacote TM coating consists of a polyurea film cover. the coating applicator consists of a modified Gusmer Model H-2000 high pressure proportioner that controls the mixture of coating compounds and a Gusmer Model No. GX-7 spray gun for spraying the coating onto the surfaces. Coatings were prepared by mixing two different compounds before the application. The proportion of the compounds are controlled at the high pressure proportioner and delivered to the spray gun via two different hoses.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Savannah River Site, 105-P Reactor Facility

**Project Name:** SR-FA20; Reactors Monitoring Project

**Date of Deployment:** May - July 1998

**Technology User:** Facility  
Decommissioning  
Division

**Deployment Value/Impact:** Reduces PPE requirements during S&M, thereby reducing cost. Reduces risk to workers and the environment. In many cases eliminates the need for costly maintenance such as roof repairs.

**Point of Contact:**

**User Program POC:**

- Ms. Heatherly Dukes (Westinghouse Savannah River Company) - Tel. 803-557-9205
- Mr. Martin Salazar (DOE Savannah River) - Tel. 803-557-3617

**OST Program POC:**

Mr. John Duda (DOE/FETC) - Tel. 304-285-4217

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

Master Lee

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$168

**Other Deployments:**

- Deployed (type: DOE) in FY 1997 at Savannah River Site (105-C Decon Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-C Decon Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Rocky Flats Environmental Technology Site (Room 3559) in Golden, CO
- Deployed (type: DOE) in FY 1998 at Savannah River Site (H Area Tank 15) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (F Area Tanks 17 and 20) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-R Reactor Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (F Area Tanks 25-28 and 44-47) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (E Area Vaults) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (ITP Tank 42) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-C Decon Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (F Area Test Pump House) in

## Reactor Surface Contamination Stabilization

(OST Ref. No. 1839)

Aiken, SC

- Deployed (type: DOE) in FY 1998 at Savannah River Site (211 H) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-L Reactor Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-C Decon Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (Old Sand Filter Trench) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-C Decon Facility) in Aiken, SC

## Reactor Surface Contamination Stabilization

(OST Ref. No. 1839)

The Master Lee coating 'Instacote' can be used contain airborne contaminants, as well as to fix loose surface contaminants. Master-Lee's Instacote TM coating consists of a polyurea film cover. the coating applicator consists of a modified Gusmer Model H-2000 high pressure proportioner that controls the mixture of coating compounds and a Gusmer Model No. GX-7 spray gun for spraying the coating onto the surfaces. Coatings were prepared by mixing two different compounds before the application. The proportion of the compounds are controlled at the high pressure proportioner and delivered to the spray gun via two different hoses.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Savannah River Site, 105-R Reactor Facility

**Project Name:** SR-FA20; Reactors Monitoring Project

**Date of Deployment:** February - June 1998    **Technology User:** Facility Decommissioning Division

**Deployment Value/Impact:** Reduces PPE requirements during S&M, thereby reducing cost. Reduces risk to workers and the environment. In many cases eliminates the need for costly maintenance such as roof repairs.

**Point of Contact:**

**User Program POC:**

- Ms. Heatherly Dukes (Westinghouse Savannah River Company) - Tel. 803-557-9205
- Mr. Martin Salazar (DOE Savannah River) - Tel. 803-557-3617

**OST Program POC:**

Mr. John Duda (DOE/FETC) - Tel. 304-285-4217

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

Master Lee

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$168

**Other Deployments:**

- Deployed (type: DOE) in FY 1997 at Savannah River Site (105-C Decon Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-C Decon Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Rocky Flats Environmental Technology Site (Room 3559) in Golden, CO
- Deployed (type: DOE) in FY 1998 at Savannah River Site (H Area Tank 15) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (F Area Tanks 17 and 20) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (F Area Tanks 25-28 and 44-47) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-P Reactor Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (E Area Vaults) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (ITP Tank 42) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-C Decon Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (F Area Test Pump House) in

## Reactor Surface Contamination Stabilization

(OST Ref. No. 1839)

Aiken, SC

- Deployed (type: DOE) in FY 1998 at Savannah River Site (211 H) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-L Reactor Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-C Decon Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (Old Sand Filter Trench) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-C Decon Facility) in Aiken, SC



## Reactor Surface Contamination Stabilization

(OST Ref. No. 1839)

The Master Lee coating 'Instacote' can be used contain airborne contaminants, as well as to fix loose surface contaminants. Master-Lee's Instacote TM coating consists of a polyurea film cover. the coating applicator consists of a modified Gusmer Model H-2000 high pressure proportioner that controls the mixture of coating compounds and a Gusmer Model No. GX-7 spray gun for spraying the coating onto the surfaces. Coatings were prepared by mixing two different compounds before the application. The proportion of the compounds are controlled at the high pressure proportioner and delivered to the spray gun via two different hoses.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Savannah River Site, F Area Tanks 17 and 20

**Project Name:** SR-NM01, SR-HL02, SR-HL09, and SR-HL11; F-Area Stabilization Project, F-Tank Farm, Tank Farm Service Upgrades, and Tank Farm Support Services F Area

**Date of Deployment:** March 1998

**Technology User:** Facility  
Decommissioning  
Division

**Deployment Value/Impact:** Reduces PPE requirements during S&M, thereby reducing cost. Reduces risk to workers and the environment.

**Point of Contact:**

**User Program POC:**

- Ms. Heatherly Dukes (Westinghouse Savannah River Company) - Tel. 803-557-9205
- Mr. Martin Salazar (DOE Savannah River) - Tel. 803-557-3617

**OST Program POC:**

Mr. John Duda (DOE/FETC) - Tel. 304-285-4217

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

Master Lee

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$168

**Other Deployments:**

- Deployed (type: DOE) in FY 1997 at Savannah River Site (105-C Decon Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-C Decon Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Rocky Flats Environmental Technology Site (Room 3559) in Golden, CO
- Deployed (type: DOE) in FY 1998 at Savannah River Site (H Area Tank 15) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-R Reactor Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (F Area Tanks 25-28 and 44-47) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-P Reactor Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (E Area Vaults) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (ITP Tank 42) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-C Decon Facility) in Aiken, SC

## Reactor Surface Contamination Stabilization

(OST Ref. No. 1839)

- Deployed (type: DOE) in FY 1998 at Savannah River Site (F Area Test Pump House) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (211 H) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-L Reactor Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-C Decon Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (Old Sand Filter Trench) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-C Decon Facility) in Aiken, SC

## Reactor Surface Contamination Stabilization

(OST Ref. No. 1839)

The Master Lee coating 'Instacote' can be used contain airborne contaminants, as well as to fix loose surface contaminants. Master-Lee's Instacote TM coating consists of a polyurea film cover. the coating applicator consists of a modified Gusmer Model H-2000 high pressure proportioner that controls the mixture of coating compounds and a Gusmer Model No. GX-7 spray gun for spraying the coating onto the surfaces. Coatings were prepared by mixing two different compounds before the application. The proportion of the compounds are controlled at the high pressure proportioner and delivered to the spray gun via two different hoses.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Savannah River Site, 105-C Decon Facility: Rail car contaminant stabilization

**Project Name:** SR-FA20; Reactors Monitoring Project

**Date of Deployment:** February 1998

**Technology User:** Facility  
Decommissioning  
Division

**Deployment Value/Impact:** Master-Lee's Instacoate is being used as one of many D&D tools at the SRS Decon Facility. It is used for contamination rollback to fix contaminants in place on outdoor structures site wide, mainly on reactors and tank farms. In this application a contaminated rail car was made available for reuse by fixing the contamination in place. Instacoate was chosen for its long term weather durability, and has reduced the necessity of wearing PPEs near these structures/facilities, thus helping reduce costs.

**Point of Contact:**

**User Program POC:**

- Ms. Heatherly Dukes (Westinghouse Savannah River Company) - Tel. 803-557-9205
- Mr. Martin Salazar (DOE Savannah River) - Tel. 803-557-3617

**OST Program POC:**

Mr. John Duda (DOE/FETC) - Tel. 304-285-4217

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

Master Lee

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$168

**Other Deployments:**

- Deployed (type: DOE) in FY 1997 at Savannah River Site (105-C Decon Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Rocky Flats Environmental Technology Site (Room 3559) in Golden, CO
- Deployed (type: DOE) in FY 1998 at Savannah River Site (H Area Tank 15) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (F Area Tanks 17 and 20) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-R Reactor Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (F Area Tanks 25-28 and 44-47) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-P Reactor Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (E Area Vaults) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (ITP Tank 42) in Aiken, SC

## Reactor Surface Contamination Stabilization

(OST Ref. No. 1839)

- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-C Decon Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (F Area Test Pump House) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (211 H) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-L Reactor Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-C Decon Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (Old Sand Filter Trench) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-C Decon Facility) in Aiken, SC

## Reactor Surface Contamination Stabilization

(OST Ref. No. 1839)

The Master Lee coating 'Instacote' can be used contain airborne contaminants, as well as to fix loose surface contaminants. Master-Lee's Instacote TM coating consists of a polyurea film cover. the coating applicator consists of a modified Gusmer Model H-2000 high pressure proportioner that controls the mixture of coating compounds and a Gusmer Model No. GX-7 spray gun for spraying the coating onto the surfaces. Coatings were prepared by mixing two different compounds before the application. The proportion of the compounds are controlled at the high pressure proportioner and delivered to the spray gun via two different hoses.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Savannah River Site, H Area Tank 15

**Project Name:** SR-NM02, SR-HL01, SR-HL09, and SR-HL10; H-Area Stabilization Project, H-Tank Farm, Tank Farm Service Upgrades, and H-Tank Farm Storm Water System Upgrades

**Date of Deployment:** January - April 1998      **Technology User:** Facility Decommissioning Division

**Deployment Value/Impact:** Reduces PPE requirements during S&M, thereby reducing cost. Reduces risk to workers and the environment.

**Point of Contact:**

**User Program POC:**

- Ms. Heatherly Dukes (Westinghouse Savannah River Company) - Tel. 803-557-9205
- Mr. Martin Salazar (DOE Savannah River) - Tel. 803-557-3617

**OST Program POC:**

Mr. John Duda (DOE/FETC) - Tel. 304-285-4217

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

Master Lee

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$168

**Other Deployments:**

- Deployed (type: DOE) in FY 1997 at Savannah River Site (105-C Decon Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-C Decon Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Rocky Flats Environmental Technology Site (Room 3559) in Golden, CO
- Deployed (type: DOE) in FY 1998 at Savannah River Site (F Area Tanks 17 and 20) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-R Reactor Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (F Area Tanks 25-28 and 44-47) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-P Reactor Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (E Area Vaults) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (ITP Tank 42) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-C Decon Facility) in Aiken, SC

## Reactor Surface Contamination Stabilization

(OST Ref. No. 1839)

SC

- Deployed (type: DOE) in FY 1998 at Savannah River Site (F Area Test Pump House) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (211 H) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-L Reactor Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-C Decon Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (Old Sand Filter Trench) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-C Decon Facility) in Aiken, SC

## Reactor Surface Contamination Stabilization

(OST Ref. No. 1839)

The Master Lee coating 'Instacote' can be used contain airborne contaminants, as well as to fix loose surface contaminants. Master-Lee's Instacote TM coating consists of a polyurea film cover. the coating applicator consists of a modified Gusmer Model H-2000 high pressure proportioner that controls the mixture of coating compounds and a Gusmer Model No. GX-7 spray gun for spraying the coating onto the surfaces. Coatings were prepared by mixing two different compounds before the application. The proportion of the compounds are controlled at the high pressure proportioner and delivered to the spray gun via two different hoses.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Savannah River Site, F Area Test Pump House

**Project Name:** SR-NM01; F-Area Stabilization

**Date of Deployment:** August - September 1998      **Technology User:** Facility Decommissioning Division

**Deployment Value/Impact:** Reduces PPE requirements during S&M, thereby reducing cost. Reduces risk to workers and the environment.

**Point of Contact:**

**User Program POC:**

- Ms. Heatherly Dukes (Westinghouse Savannah River Company) - Tel. 803-557-9205
- Mr. Martin Salazar (DOE Savannah River) - Tel. 803-557-3617

**OST Program POC:**

Mr. John Duda (DOE/FETC) - Tel. 304-285-4217

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

Master Lee

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$168

**Other Deployments:**

- Deployed (type: DOE) in FY 1997 at Savannah River Site (105-C Decon Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-C Decon Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Rocky Flats Environmental Technology Site (Room 3559) in Golden, CO
- Deployed (type: DOE) in FY 1998 at Savannah River Site (H Area Tank 15) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (F Area Tanks 17 and 20) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-R Reactor Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (F Area Tanks 25-28 and 44-47) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-P Reactor Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (E Area Vaults) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (ITP Tank 42) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-C Decon Facility) in Aiken, SC

## **Reactor Surface Contamination Stabilization**

(OST Ref. No. 1839)

- Deployed (type: DOE) in FY 1998 at Savannah River Site (211 H) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-L Reactor Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-C Decon Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (Old Sand Filter Trench) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-C Decon Facility) in Aiken, SC



## Reactor Surface Contamination Stabilization

(OST Ref. No. 1839)

The Master Lee coating 'Instacote' can be used contain airborne contaminants, as well as to fix loose surface contaminants. Master-Lee's Instacote TM coating consists of a polyurea film cover. the coating applicator consists of a modified Gusmer Model H-2000 high pressure proportioner that controls the mixture of coating compounds and a Gusmer Model No. GX-7 spray gun for spraying the coating onto the surfaces. Coatings were prepared by mixing two different compounds before the application. The proportion of the compounds are controlled at the high pressure proportioner and delivered to the spray gun via two different hoses.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Savannah River Site, E Area Vaults

**Project Name:** No Project Name information has been defined

**Date of Deployment:** June - July 1998      **Technology User:** Facility  
Decommissioning  
Division

**Deployment Value/Impact:** Reduces PPE requirements during S&M, thereby reducing cost. Reduces risk to workers and the environment.

**Point of Contact:**

**User Program POC:**

- Ms. Heatherly Dukes (Westinghouse Savannah River Company) - Tel. 803-557-9205
- Mr. Martin Salazar (DOE Savannah River) - Tel. 803-557-3617

**OST Program POC:**

Mr. John Duda (DOE/FETC) - Tel. 304-285-4217

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

Master Lee

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$168

**Other Deployments:**

- Deployed (type: DOE) in FY 1997 at Savannah River Site (105-C Decon Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-C Decon Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Rocky Flats Environmental Technology Site (Room 3559) in Golden, CO
- Deployed (type: DOE) in FY 1998 at Savannah River Site (H Area Tank 15) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (F Area Tanks 17 and 20) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-R Reactor Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (F Area Tanks 25-28 and 44-47) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-P Reactor Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (ITP Tank 42) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-C Decon Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (F Area Test Pump House) in

## Reactor Surface Contamination Stabilization

(OST Ref. No. 1839)

Aiken, SC

- Deployed (type: DOE) in FY 1998 at Savannah River Site (211 H) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-L Reactor Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-C Decon Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (Old Sand Filter Trench) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-C Decon Facility) in Aiken, SC

## Reactor Surface Contamination Stabilization

(OST Ref. No. 1839)

The Master Lee coating 'Instacote' can be used contain airborne contaminants, as well as to fix loose surface contaminants. Master-Lee's Instacote TM coating consists of a polyurea film cover. the coating applicator consists of a modified Gusmer Model H-2000 high pressure proportioner that controls the mixture of coating compounds and a Gusmer Model No. GX-7 spray gun for spraying the coating onto the surfaces. Coatings were prepared by mixing two different compounds before the application. The proportion of the compounds are controlled at the high pressure proportioner and delivered to the spray gun via two different hoses.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Savannah River Site, 105-C Decon Facility: Trailer space rollback

**Project Name:** SR-FA20; Reactors Monitoring Project

**Date of Deployment:** July - August 1998      **Technology User:** Facility  
Decommissioning  
Division

**Deployment Value/Impact:** Master-Lee's Instacoate is being used as one of many D&D tools at the SRS Decon Facility. It is used for contamination rollback to fix contaminants in place on outdoor structures site wide, mainly on reactors and tank farms. Instacoate was chosen for its long term weather durability, and has reduced the necessity of wearing PPEs near these structures/facilities, thus helping reduce costs.

**Point of Contact:**

**User Program POC:**

- Ms. Heatherly Dukes (Westinghouse Savannah River Company) - Tel. 803-557-9205
- Mr. Martin Salazar (DOE Savannah River) - Tel. 803-557-3617

**OST Program POC:**

Mr. John Duda (DOE/FETC) - Tel. 304-285-4217

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

Master Lee

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$168

**Other Deployments:**

- Deployed (type: DOE) in FY 1997 at Savannah River Site (105-C Decon Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-C Decon Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Rocky Flats Environmental Technology Site (Room 3559) in Golden, CO
- Deployed (type: DOE) in FY 1998 at Savannah River Site (H Area Tank 15) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (F Area Tanks 17 and 20) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-R Reactor Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (F Area Tanks 25-28 and 44-47) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-P Reactor Facility) in Aiken, SC

## Reactor Surface Contamination Stabilization

(OST Ref. No. 1839)

- Deployed (type: DOE) in FY 1998 at Savannah River Site (E Area Vaults) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (ITP Tank 42) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-C Decon Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (F Area Test Pump House) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (211 H) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-L Reactor Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (Old Sand Filter Trench) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-C Decon Facility) in Aiken, SC

## Reactor Surface Contamination Stabilization

(OST Ref. No. 1839)

The Master Lee coating 'Instacote' can be used contain airborne contaminants, as well as to fix loose surface contaminants. Master-Lee's Instacote TM coating consists of a polyurea film cover. the coating applicator consists of a modified Gusmer Model H-2000 high pressure proportioner that controls the mixture of coating compounds and a Gusmer Model No. GX-7 spray gun for spraying the coating onto the surfaces. Coatings were prepared by mixing two different compounds before the application. The proportion of the compounds are controlled at the high pressure proportioner and delivered to the spray gun via two different hoses.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Savannah River Site, 105-C Decon Facility: Transfer Bay Dock

**Project Name:** SR-FA20; Reactors Monitoring Project

**Date of Deployment:** September 1998      **Technology User:** Facility  
Decommissioning  
Division

**Deployment Value/Impact:** Master-Lee's Instacoate is being used as one of many D&D tools at the SRS Decon Facility. It is used for contamination rollback to fix contaminants in place on outdoor structures site wide, mainly on reactors and tank farms. Instacoate was chosen for its long term weather durability, and has reduced the necessity of wearing PPEs near these structures/facilities, thus helping reduce costs.

**Point of Contact:**

**User Program POC:**

- Ms. Heatherly Dukes (Westinghouse Savannah River Company) - Tel. 803-557-9205
- Mr. Martin Salazar (DOE Savannah River) - Tel. 803-557-3617

**OST Program POC:**

Mr. John Duda (DOE/FETC) - Tel. 304-285-4217

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

Master Lee

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$168

**Other Deployments:**

- Deployed (type: DOE) in FY 1997 at Savannah River Site (105-C Decon Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-C Decon Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Rocky Flats Environmental Technology Site (Room 3559) in Golden, CO
- Deployed (type: DOE) in FY 1998 at Savannah River Site (H Area Tank 15) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (F Area Tanks 17 and 20) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-R Reactor Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (F Area Tanks 25-28 and 44-47) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-P Reactor Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (E Area Vaults) in Aiken, SC

## **Reactor Surface Contamination Stabilization**

(OST Ref. No. 1839)

- Deployed (type: DOE) in FY 1998 at Savannah River Site (ITP Tank 40) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-C Decon Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (F Area Test Pump House) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (211 H) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-L Reactor Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-C Decon Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (Old Sand Filter Trench, F Area) in Aiken, SC

## Reactor Surface Contamination Stabilization

(OST Ref. No. 1839)

The Master Lee coating 'Instacote' can be used contain airborne contaminants, as well as to fix loose surface contaminants. Master-Lee's Instacote TM coating consists of a polyurea film cover. the coating applicator consists of a modified Gusmer Model H-2000 high pressure proportioner that controls the mixture of coating compounds and a Gusmer Model No. GX-7 spray gun for spraying the coating onto the surfaces. Coatings were prepared by mixing two different compounds before the application. The proportion of the compounds are controlled at the high pressure proportioner and delivered to the spray gun via two different hoses.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Savannah River Site, 105-L Reactor Facility

**Project Name:** SR-FA20; Reactors Monitoring Project

**Date of Deployment:** July - August 1998      **Technology User:** Facility Decommissioning Division

**Deployment Value/Impact:** Reduces PPE requirements during S&M, thereby reducing cost. Reduces risk to workers and the environment. In many cases eliminates the need for costly maintenance such as roof repairs.

**Point of Contact:**

**User Program POC:**

- Ms. Heatherly Dukes (Westinghouse Savannah River Company) - Tel. 803-557-9205
- Mr. Martin Salazar (DOE Savannah River) - Tel. 803-557-3617

**OST Program POC:**

Mr. John Duda (DOE/FETC) - Tel. 304-285-4217

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

Master Lee

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$168

**Other Deployments:**

- Deployed (type: DOE) in FY 1997 at Savannah River Site (105-C Decon Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-C Decon Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Rocky Flats Environmental Technology Site (Room 3559) in Golden, CO
- Deployed (type: DOE) in FY 1998 at Savannah River Site (H Area Tank 15) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (F Area Tanks 17 and 20) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-R Reactor Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (F Area Tanks 25-28 and 44-47) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-P Reactor Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (E Area Vaults) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (ITP Tank 42) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-C Decon Facility) in Aiken, SC

## Reactor Surface Contamination Stabilization

(OST Ref. No. 1839)

SC

- Deployed (type: DOE) in FY 1998 at Savannah River Site (F Area Test Pump House) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (211 H) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-C Decon Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (Old Sand Filter Trench) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-C Decon Facility) in Aiken, SC





## Reactor Surface Contamination Stabilization

(OST Ref. No. 1839)

The Master Lee coating 'Instacote' can be used contain airborne contaminants, as well as to fix loose surface contaminants. Master-Lee's Instacote TM coating consists of a polyurea film cover. the coating applicator consists of a modified Gusmer Model H-2000 high pressure proportioner that controls the mixture of coating compounds and a Gusmer Model No. GX-7 spray gun for spraying the coating onto the surfaces. Coatings were prepared by mixing two different compounds before the application. The proportion of the compounds are controlled at the high pressure proportioner and delivered to the spray gun via two different hoses.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Savannah River Site, 211 H

**Project Name:** SR-NM02; H-Area Stabilization Project

**Date of Deployment:** July 1998

**Technology User:** Facility  
Decommissioning  
Division

**Deployment Value/Impact:** Reduces PPE requirements during S&M, thereby reducing cost. Reduces risk to workers and the environment.

**Point of Contact:**

**User Program POC:**

- Ms. Heatherly Dukes (Westinghouse Savannah River Company) - Tel. 803-557-9205
- Mr. Martin Salazar (DOE Savannah River) - Tel. 803-557-3617

**OST Program POC:**

Mr. John Duda (DOE/FETC) - Tel. 304-285-4217

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

Master Lee

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$168

**Other Deployments:**

- Deployed (type: DOE) in FY 1997 at Savannah River Site (105-C Decon Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-C Decon Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Rocky Flats Environmental Technology Site (Room 3559) in Golden, CO
- Deployed (type: DOE) in FY 1998 at Savannah River Site (H Area Tank 15) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (F Area Tanks 17 and 20) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-R Reactor Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (F Area Tanks 25-28 and 44-47) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-P Reactor Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (E Area Vaults) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (ITP Tank 42) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-C Decon Facility) in Aiken, SC

## **Reactor Surface Contamination Stabilization**

(OST Ref. No. 1839)

- Deployed (type: DOE) in FY 1998 at Savannah River Site (F Area Test Pump House) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-L Reactor Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-C Decon Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (Old Sand Filter Trench) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-C Decon Facility) in Aiken, SC

## Reactor Surface Contamination Stabilization

(OST Ref. No. 1839)

The Master Lee coating 'Instacote' can be used contain airborne contaminants, as well as to fix loose surface contaminants. Master-Lee's Instacote TM coating consists of a polyurea film cover. the coating applicator consists of a modified Gusmer Model H-2000 high pressure proportioner that controls the mixture of coating compounds and a Gusmer Model No. GX-7 spray gun for spraying the coating onto the surfaces. Coatings were prepared by mixing two different compounds before the application. The proportion of the compounds are controlled at the high pressure proportioner and delivered to the spray gun via two different hoses.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Savannah River Site, Old Sand Filter Trench (F Area)

**Project Name:** SR-NM01; F-Area Stabilization Project

**Date of Deployment:** September - October 1998      **Technology User:** Facility Decommissioning Division

**Deployment Value/Impact:** Reduces PPE requirements during S&M, thereby reducing cost. Reduces risk to workers and the environment.

**Point of Contact:**

**User Program POC:**

- Ms. Heatherly Dukes (Westinghouse Savannah River Company) - Tel. 803-557-9205
- Mr. Martin Salazar (DOE Savannah River) - Tel. 803-557-3617

**OST Program POC:**

Mr. John Duda (DOE/FETC) - Tel. 304-285-4217

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

Master Lee

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$168

**Other Deployments:**

- Deployed (type: DOE) in FY 1997 at Savannah River Site (105-C Decon Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-C Decon Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Rocky Flats Environmental Technology Site (Room 3559) in Golden, CO
- Deployed (type: DOE) in FY 1998 at Savannah River Site (H Area Tank 15) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (F Area Tanks 17 and 20) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-R Reactor Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (F Area Tanks 25-28 and 44-47) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-P Reactor Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (E Area Vaults) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (ITP Tank 42) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-C Decon Facility) in Aiken, SC

## **Reactor Surface Contamination Stabilization**

(OST Ref. No. 1839)

- Deployed (type: DOE) in FY 1998 at Savannah River Site (F Area Test Pump House) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (211 H) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-L Reactor Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-C Decon Facility) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (105-C Decon Facility) in Aiken, SC

## Gamma Cam (TM) Radiation Imaging System

(OST Ref. No. 1840)

The GammaCam<sup>TM</sup> System displays the relative strength and location of gamma radiation as a two-dimensional image superimposed on the corresponding visual image. GammaCam consists of a portable sensor head that contains a gamma-ray imaging system and a TV camera. The superimposed radiation and visual images are displayed on a standard portable PC computer screen located several hundred feet from the radiation area. The PC controls the data acquisition time, the field of view, and the image display.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** INEEL, INTEC (New Waste Calcining Facility)

**Project Name:** ID-ER-110; Decontamination & Dismantlement

**Date of Deployment:** April 1998

**Technology User:** LMITCO

**Deployment Value/Impact:** The Gamma Cam was used to identify radiological hot spots prior to initial remote decontamination. Approximately 40 hours of radiological control technician (RCT) time is saved per maintenance activity; saving an estimated \$92.6K per activity.

**Point of Contact:**

**User Program POC:**

Mr. Garald Smith (DOE/ID) - Tel. 208-526-5200

**OST Program POC:**

Steve Bossart (DOE/FETC) - Tel. 304-285-4643

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

AIL Systems

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$71

(Outside Funding: \$6)

**Other Deployments:**

- Deployed (type: DOE) in FY 1996 at Los Alamos National Laboratory (Unknown) in Los Alamos, NM
- Deployed (type: DOE) in FY 1997 at Argonne National Lab (CP-5 Test Reactor) in Argonne, IL
- Deployed (type: Non-DOE) in FY 1997 at Arkansas Nuclear One (Reactor Building) in Russellville, AR
- FY 1997 INEEL Advanced Test Reactor (ATR) Valve Cubicle 2B in Idaho Falls, ID
- Deployed (type: DOE) in FY 1998 at Hanford (B-Plant) in Richland, WA
- Deployed (type: Non-DOE) in FY 1998 at Wolf Creek Nuclear Operating Corporation (N/A) in Burlington, KS

## Gamma Cam (TM) Radiation Imaging System

(OST Ref. No. 1840)

The GammaCamTM System displays the relative strength and location of gamma radiation as a two-dimensional image superimposed on the corresponding visual image. GammaCamTM consists of a portable sensor head that contains a gamma-ray imaging system and a TV camera. The superimposed radiation and visual images are displayed on a standard portable PC computer screen located several hundred feet from the radiation area. The PC controls the data acquisition time, the field of view, and the image display.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Hanford; Richland, WA (B-Plant)

**Project Name:** RL-TP01, B Plant Subproject

**Date of Deployment:** May 1998

**Technology User:** B&W Services

**Deployment Value/Impact:** The Gamma Cam was used to scan 40 process cells at Hanford's B Plant. The system provided imaging of extremely hot locations without requiring access to the process cells by D&D workers thereby, reducing worker exposure.

**Point of Contact:**

**User Program POC:**

Ms. Shannon Saget (DOE/RL) - Tel. 509-372-4029

**OST Program POC:**

John Duda (DOE/FETC) - Tel. 304-285-4217

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

AIL Systems, Inc.

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$71

(Outside Funding: \$6)

**Other Deployments:**

- FY 1996 at Los Alamos National Laboratory
- FY 1997 at Argonne National Lab CP-5 Test Reactor
- FY 1997 (Non-DOE) Arkansas Nuclear One (Reactor Building) in Russellville, AR
- FY 1997 INEEL Advanced Test Reactor (ATR) Valve Cubicle 2B in Idaho Falls, ID
- FY 1998 (Non-DOE) Wolf Creek Nuclear Operating Corporation in Burlington, KS

## Gamma Cam (TM) Radiation Imaging System

(OST Ref. No. 1840)

The GammaCamTM System displays the relative strength and location of gamma radiation as a two-dimensional image superimposed on the corresponding visual image. GammaCamTM consists of a portable sensor head that contains a gamma-ray imaging system and a TV camera. The superimposed radiation and visual images are displayed on a standard portable PC computer screen located several hundred feet from the radiation area. The PC controls the data acquisition time, the field of view, and the image display.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Wolf Creek Nuclear Operating Corporation; Burlington, KS

**Project Name:** NA - Non-DOE Deployment

**Date of Deployment:** October 1997

**Technology User:** Wolf Creek Nuclear Operating Corp.

**Deployment Value/Impact:** Leased in September through October 1997 to conduct visual imaging of plant systems and components. The Gamma Cam provided real time images of radiological hot areas thereby, reducing worker risk to exposure.

**Point of Contact:**

**User Program POC:**

Mr. Richard Stumbaugh (WCNOC) - Tel. 316-364-8831 x4808

**OST Program POC:**

Steve Bossart (DOE/FETC) - Tel. 304-285-4643

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

AIL Systems, Inc.

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$71

(Outside Funding: \$6)

**Other Deployments:**

- FY 1996 at Los Alamos National Laboratory
- FY 1997 at Argonne National Lab CP-5 Test Reactor
- FY 1997 (Non-DOE) Arkansas Nuclear One (Reactor Building) in Russellville, AR
- FY 1997 INEEL Advanced Test Reactor (ATR) Valve Cubicle 2B in Idaho Falls, ID
- FY 1998 Hanford B Plant process cells



## Oxy-Gasoline Torch

(OST Ref. No. 1847)

The Oxy-Gasoline Safety Torch was developed by Petrogen International Ltd., Richmond, Calif. The Oxy-Gasoline cutting technique has been around for many years but was not considered a safe method because earlier technology charged a gasoline tank with oxygen and piped this volatile vapor to the cutting torch. A backflash often resulted in explosion. The system is a safe, reliable design which makes backflash impossible. An additional advantage of the Oxy-Gasoline Torch is the evaporation of gasoline which acts as a refrigeration process making the torch run cooler than conventional torches thereby, greatly extending tip life. The Oxy-Gasoline Torch burns at a temperature of over 5,000 degrees F and the force of the expanding gasoline flame allows for cutting under adverse conditions (dirty, rusty, cement coatings or backing, stacks of deformed plate, 5 percent chrome steel, 9 percent nickel steel, etc.). The torch deployed is a hand-held torch with a 2.5-gallon gasoline tank and a manifold tank system for the liquid oxygen. The Petrogen Oxy-Gasoline Torch is also available as a machine torch which can be mounted on track machines, pipe cutters, and rail cutters.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Fernald, Buildings 38A, 38B, 24B (ASTD Project)

**Project Name:** OH-FN-01; Facility Shutdown and OH-FN-02; Facility D&D

**Date of Deployment:** August-September, 1998      **Technology User:** Wise Services

**Deployment Value/Impact:** The oxygasoline torch was deployed as part of the INEEL/Fernald ASTD in FY98 to assist in the D&D of three buildings at Fernald. It was used to segment two 90-ft-long, 6-ft-wide, 1-in-thick propane tanks in Buildings 38A and 38B. The oxygasoline torch was used to cut and size rebar and segment I-beams in Building 24B. It was significantly faster, cheaper, and safer than the baseline acetylene torch.

**Point of Contact:**

**User Program POC:**

Mr. Robert F. Danner (DOE/FN) - Tel. 513-648-3167

**OST Program POC:**

Harold Shoemaker (DOE/FETC) - Tel. 304-285-4715

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

Petrogen International, Ltd.

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$95

**Other Deployments:**

- Deployed (type: DOE) in FY 1997 at Fernald (Plant 4) in Cincinnati, OH
- Deployed (type: DOE) in FY 1997 at Oak Ridge (specific site(s) unknown) in , TN
- Deployed (type: Non-DOE) in FY 1997 at Russia in Unknown, Russia
- Deployed (type: DOE) in FY 1997 at Pantex Plant (N/A) in Amarillo, TX
- Deployed (type: Non-DOE) in FY 1997 at Kazakhstan in Unknown, Kazakhstan
- Deployed (type: Non-DOE) in FY 1998 at Envirocare in Salt Lake City, UT
- Deployed (type: Non-DOE) in FY 1997 at East River Drive in Manhattan, NY
- Deployed (type: DOE) in FY 1998 at Hanford (C Reactor Gas & Water Tunnels) in Richland, WA
- Deployed (type: DOE) in FY 1998 at Ashtabula (RF-3 Burning Building) in Ashtabula, OH
- Deployed (type: DOE) in FY 1998 at INEEL (CFA-691) in Idaho Falls, ID
- Deployed (type: DOE) in FY 1998 at Fernald (Plant 9) in Fernald, OH
- Deployed (type: DOE) in FY 1998 at Fernald (3F and 3G) in Fernald, OH

## Oxy-Gasoline Torch

(OST Ref. No. 1847)

The Oxy-Gasoline Safety Torch was developed by Petrogen International Ltd., Richmond, Calif. The Oxy-Gasoline cutting technique has been around for many years but was not considered a safe method because earlier technology charged a gasoline tank with oxygen and piped this volatile vapor to the cutting torch. A backflash often resulted in explosion. The system is a safe, reliable design which makes backflash impossible. An additional advantage of the Oxy-Gasoline Torch is the evaporation of gasoline which acts as a refrigeration process making the torch run cooler than conventional torches thereby, greatly extending tip life. The Oxy-Gasoline Torch burns at a temperature of over 5,000 degrees F and the force of the expanding gasoline flame allows for cutting under adverse conditions (dirty, rusty, cement coatings or backing, stacks of deformed plate, 5 percent chrome steel, 9 percent nickel steel, etc.). The torch deployed is a hand-held torch with a 2.5-gallon gasoline tank and a manifold tank system for the liquid oxygen. The Petrogen Oxy-Gasoline Torch is also available as a machine torch which can be mounted on track machines, pipe cutters, and rail cutters.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Ashtabula, RF-3 Burning Building

**Project Name:** OH-AB-01; RMI Remediation

**Date of Deployment:** June 1998

**Technology User:** RMI Environmental Services

**Deployment Value/Impact:** The Oxy-gasoline torch was used to size reduce equipment and components including pumps, compressors, and I-beams to NTS and Envirocare size limits for disposal. For equipment less than 1/4' and greater than 3' the oxy-gasoline torch showed no significant benefit over baseline acetylene torches. The oxy-gasoline torch was also found to be less effective for cast iron such as that found on lathe bases. However, for equipment requiring cuts ranging from 1/4 to 3', the oxy-gasoline torch was 25-30% faster than the baseline acetylene torch.

**Point of Contact:**

**User Program POC:**

Mr. Ward Best (DOE/Ashtabula) - Tel. 440-993-1944

**OST Program POC:**

Steve Bossart (DOE/FETC) - Tel. 304-285-4643

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

Petrogen International, Inc.

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$95

**Other Deployments:**

- Deployed (type: DOE) in FY 1997 at Fernald (Plant 4) in Cincinnati, OH
- Deployed (type: DOE) in FY 1997 at Oak Ridge (specific site(s) unknown) in , TN
- Deployed (type: Non-DOE) in FY 1997 at Russia in Unknown, Russia
- Deployed (type: DOE) in FY 1997 at Pantex Plant (N/A) in Amarillo, TX
- Deployed (type: Non-DOE) in FY 1997 at Kazakhstan in Unknown, Kazakhstan
- Deployed (type: Non-DOE) in FY 1998 at Envirocare in Salt Lake City, UT
- Deployed (type: Non-DOE) in FY 1997 at East River Drive in Manhattan, NY
- Deployed (type: DOE) in FY 1998 at Hanford (C Reactor Gas & Water Tunnels) in Richland, WA
- Deployed (type: DOE) in FY 1998 at INEEL (CFA-691) in Idaho Falls, ID
- Deployed (type: DOE) in FY 1998 at Fernald (Buildings 38A, 38B, and 24B) in Fernald, OH

## Oxy-Gasoline Torch

(OST Ref. No. 1847)

The Oxy-Gasoline Safety Torch was developed by Petrogen International Ltd., Richmond, Calif. The Oxy-Gasoline cutting technique has been around for many years but was not considered a safe method because earlier technology charged a gasoline tank with oxygen and piped this volatile vapor to the cutting torch. A backflash often resulted in explosion. The system is a safe, reliable design which makes backflash impossible. An additional advantage of the Oxy-Gasoline Torch is the evaporation of gasoline which acts as a refrigeration process making the torch run cooler than conventional torches thereby, greatly extending tip life. The Oxy-Gasoline Torch burns at a temperature of over 5,000 degrees F and the force of the expanding gasoline flame allows for cutting under adverse conditions (dirty, rusty, cement coatings or backing, stacks of deformed plate, 5 percent chrome steel, 9 percent nickel steel, etc.). The torch deployed is a hand-held torch with a 2.5-gallon gasoline tank and a manifold tank system for the liquid oxygen. The Petrogen Oxy-Gasoline Torch is also available as a machine torch which can be mounted on track machines, pipe cutters, and rail cutters.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** INEEL, CFA-691

**Project Name:** ID-ER-110; Decontamination and Dismantlement

**Date of Deployment:** July, 1998

**Technology User:** LMITCO

**Deployment Value/Impact:** During dismantlement operations, the oxy-gasoline torch was used to cut and size rebar. The technology proved, faster, cheaper, and safer than baseline cutting techniques.

**Point of Contact:**

**User Program POC:**

- Mr. Garald Smith (DOE/ID) - Tel. 208-526-5200
- Mr. Richard H. Meservey (Lockheed Martin Idaho Technologies Co.) - Tel. (208) 526-1834
- Ms. Ann Marie Smith (LMITCO) - Tel. 208-526-6877

**OST Program POC:**

Steve Bossart (DOE/FETC) - Tel. 304-285-1643

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

Petrogen International, Inc.

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$95

**Other Deployments:**

- Deployed (type: DOE) in FY 1997 at Fernald (Plant 4) in Cincinnati, OH
- Deployed (type: DOE) in FY 1997 at Oak Ridge (specific site(s) unknown) in , TN
- Deployed (type: Non-DOE) in FY 1997 at Russia in Unknown, Russia
- Deployed (type: DOE) in FY 1997 at Pantex Plant (N/A) in Amarillo, TX
- Deployed (type: Non-DOE) in FY 1997 at Kazakhstan in Unknown, Kazakhstan
- Deployed (type: Non-DOE) in FY 1998 at Envirocare in Salt Lake City, UT
- Deployed (type: Non-DOE) in FY 1997 at East River Drive in Manhattan, NY
- Deployed (type: DOE) in FY 1998 at Hanford (C Reactor Gas & Water Tunnels) in Richland, WA
- Deployed (type: DOE) in FY 1998 at Ashtabula (RF-3 Burning Building) in Ashtabula, OH
- Deployed (type: DOE) in FY 1998 at Fernald (Buildings 38A, 38B, and 24B) in Fernald, OH

## Oxy-Gasoline Torch

(OST Ref. No. 1847)

The Oxy-Gasoline Safety Torch was developed by Petrogen International Ltd., Richmond, Calif. The Oxy-Gasoline cutting technique has been around for many years but was not considered a safe method because earlier technology charged a gasoline tank with oxygen and piped this volatile vapor to the cutting torch. A backflash often resulted in explosion. The system is a safe, reliable design which makes backflash impossible. An additional advantage of the Oxy-Gasoline Torch is the evaporation of gasoline which acts as a refrigeration process making the torch run cooler than conventional torches thereby, greatly extending tip life. The Oxy-Gasoline Torch burns at a temperature of over 5,000 degrees F and the force of the expanding gasoline flame allows for cutting under adverse conditions (dirty, rusty, cement coatings or backing, stacks of deformed plate, 5 percent chrome steel, 9 percent nickel steel, etc.). The torch deployed is a hand-held torch with a 2.5-gallon gasoline tank and a manifold tank system for the liquid oxygen. The Petrogen Oxy-Gasoline Torch is also available as a machine torch which can be mounted on track machines, pipe cutters, and rail cutters.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Hanford; Richland, WA (105-C Reactor)

**Project Name:** RL-ER06, Decontamination & Decommissioning

**Date of Deployment:** July 1998

**Technology User:** Bechtel Hanford, Inc.

**Deployment Value/Impact:** Used at C-Reactor to quickly and safely cut piping in the Gas and Water Tunnels.

**Point of Contact:**

**User Program POC:**

Mrs. Shannon N. Saget (DOE-RL) - Tel. 509-372-4029

**OST Program POC:**

John Duda (DOE/FETC) - Tel. 304-285-4217

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

Petrogen International

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$95

**Other Deployments:**

- Deployed (type: DOE) in FY 1997 at Fernald (Plant 4) in Cincinnati, OH
- Deployed (type: DOE) in FY 1997 at Oak Ridge (specific site(s) unknown) in , TN
- Deployed (type: Non-DOE) in FY 1997 at Russia in Unknown, Russia
- Deployed (type: DOE) in FY 1997 at Pantex Plant (N/A) in Amarillo, TX
- Deployed (type: Non-DOE) in FY 1997 at Kazakhstan in Unknown, Kazakhstan
- Deployed (type: Non-DOE) in FY 1997 at East River Drive in Manhattan, NY
- Deployed (type: Non-DOE) in FY 1998 at Envirocare in Salt Lake City, UT
- Deployed (type: DOE) in FY 1998 at Ashtabula (RF-3 Burning Building) in Ashtabula, OH
- Deployed (type: DOE) in FY 1998 at INEEL (CFA-691) in Idaho Falls, ID
- Deployed (type: DOE) in FY 1998 at Fernald (Buildings 38A, 38B, and 24B) in Fernald, OH

## Oxy-Gasoline Torch

(OST Ref. No. 1847)

The Oxy-Gasoline Safety Torch was developed by Petrogen International Ltd., Richmond, Calif. The Oxy-Gasoline cutting technique has been around for many years but was not considered a safe method because earlier technology charged a gasoline tank with oxygen and piped this volatile vapor to the cutting torch. A backflash often resulted in explosion. The system is a safe, reliable design which makes backflash impossible. An additional advantage of the Oxy-Gasoline Torch is the evaporation of gasoline which acts as a refrigeration process making the torch run cooler than conventional torches thereby, greatly extending tip life. The Oxy-Gasoline Torch burns at a temperature of over 5,000 degrees F and the force of the expanding gasoline flame allows for cutting under adverse conditions (dirty, rusty, cement coatings or backing, stacks of deformed plate, 5 percent chrome steel, 9 percent nickel steel, etc.). The torch deployed is a hand-held torch with a 2.5-gallon gasoline tank and a manifold tank system for the liquid oxygen. The Petrogen Oxy-Gasoline Torch is also available as a machine torch which can be mounted on track machines, pipe cutters, and rail cutters.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Fernald, Plant 9

**Project Name:** OH-FN-01; Facility Shutdown and OH-FN-02; Facility D&D

**Date of Deployment:** March 1998

**Technology User:** NSC Energy Services

**Deployment Value/Impact:** The oxygasoline torch was deployed in FY98 to size reduce railroad rails as part of Plant 9 D&D activities. Portions of the railroad rails that were segmented were up to 3-inches thick. Benefits of the oxygasoline torch included faster cutting, improved cost savings, and improved safety over the baseline acetylene torch.

**Point of Contact:**

**User Program POC:**

Mr. Robert F. Danner (DOE/FN) - Tel. 513-648-3167

**OST Program POC:**

Steve Bossart (DOE/FETC) - Tel. 304-285-4643

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

Petrogen International, Ltd.

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$95

**Other Deployments:**

- Deployed (type: DOE) in FY 1997 at Fernald (Plant 4) in Cincinnati, OH
- Deployed (type: DOE) in FY 1997 at Oak Ridge (specific site(s) unknown) in , TN
- Deployed (type: Non-DOE) in FY 1997 at Russia in Unknown, Russia
- Deployed (type: DOE) in FY 1997 at Pantex Plant (N/A) in Amarillo, TX
- Deployed (type: Non-DOE) in FY 1997 at Kazakhstan in Unknown, Kazakhstan
- Deployed (type: Non-DOE) in FY 1998 at Envirocare in Salt Lake City, UT
- Deployed (type: Non-DOE) in FY 1997 at East River Drive in Manhattan, NY
- Demonstrated (type: Full-Scale) in FY 1996 at Fernald (Plant 1) in Fernald, OH
- Deployed (type: DOE) in FY 1998 at Hanford (C Reactor Gas & Water Tunnels) in Richland, WA
- Deployed (type: DOE) in FY 1998 at Ashtabula (RF-3 Burning Building) in Ashtabula, OH
- Deployed (type: DOE) in FY 1998 at INEEL (CFA-691) in Idaho Falls, ID
- Deployed (type: DOE) in FY 1998 at Fernald (Buildings 3F and 3G) in Fernald, OH
- Deployed (type: DOE) in FY 1998 at Fernald (Buildings 38A, 38B, and 24B) in Fernald, OH
- 
-

## Oxy-Gasoline Torch

(OST Ref. No. 1847)

The Oxy-Gasoline Safety Torch was developed by Petrogen International Ltd., Richmond, Calif. The Oxy-Gasoline cutting technique has been around for many years but was not considered a safe method because earlier technology charged a gasoline tank with oxygen and piped this volatile vapor to the cutting torch. A backflash often resulted in explosion. The system is a safe, reliable design which makes backflash impossible. An additional advantage of the Oxy-Gasoline Torch is the evaporation of gasoline which acts as a refrigeration process making the torch run cooler than conventional torches thereby, greatly extending tip life. The Oxy-Gasoline Torch burns at a temperature of over 5,000 degrees F and the force of the expanding gasoline flame allows for cutting under adverse conditions (dirty, rusty, cement coatings or backing, stacks of deformed plate, 5 percent chrome steel, 9 percent nickel steel, etc.). The torch deployed is a hand-held torch with a 2.5-gallon gasoline tank and a manifold tank system for the liquid oxygen. The Petrogen Oxy-Gasoline Torch is also available as a machine torch which can be mounted on track machines, pipe cutters, and rail cutters.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Envirocare

**Project Name:** NA - Non-DOE deployment

**Date of Deployment:** Fiscal Year 1998

**Technology User:** Reactive Metals Inc.  
Environmental Services

**Deployment Value/Impact:** The Oxy-gasoline Torch was used at Envirocare of Utah to cut equipment faster, cheaper and safer than baseline acetylene torches for size reduction to meet burial size requirements.

**Point of Contact:**

**User Program POC:**

Mr. Enrique Senra (Reactive Metals  
Engineering Environmental Services  
Company) – Tel. 440-993-1948

**OST Program POC:**

Steve Bossart (DOE/FETC) - Tel. 304-285-4643

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

Petrogen International, Inc.

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$95

**Other Deployments:**

- Deployed (type: DOE) in FY 1997 at Fernald (Plant 4) in Cincinnati, OH
- Deployed (type: DOE) in FY 1997 at Oak Ridge (specific site(s) unknown) in , TN
- Deployed (type: Non-DOE) in FY 1997 at Russia in Unknown, Russia
- Deployed (type: DOE) in FY 1997 at Pantex Plant (N/A) in Amarillo, TX
- Deployed (type: Non-DOE) in FY 1997 at Kazakhstan in Unknown, Kazakhstan
- Deployed (type: Non-DOE) in FY 1997 at East River Drive in Manhattan, NY
- Deployed (type: DOE) in FY 1998 at Hanford (C Reactor Gas & Water Tunnels) in Richland, WA
- Deployed (type: DOE) in FY 1998 at Ashtabula (RF-3 Burning Building) in Ashtabula, OH
- Deployed (type: DOE) in FY 1998 at INEEL (CFA-691) in Idaho Falls, ID
- Deployed (type: DOE) in FY 1998 at Fernald (Buildings 38A, 38B, 24B) in Fernald, OH

## Centrifugal Shot Blast System

(OST Ref. No. 1851)

Centrifugal Shot Blasting is an abrasive blasting technology that propels hardened steel shot at a rate of speed high enough to remove concrete and concrete coatings from floors. The depth of removal is determined by the rate of speed at which the machine is traveling and the volume and size of shot used. The steel shot is recycled and reused until it is too small to be useable.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Fernald Environmental Management Project, Plant 8

**Project Name:** OH-FN-02, Facility D&D

**Date of Deployment:** July/August 1998

**Technology User:** Fluor Daniels Fernald

**Deployment Value/Impact:** The Centrifugal Shot Blast System was demonstrated and deployed during the Fernald LSDDP. The system was used to decontaminate approximately 1464 sq. ft. of concrete floor in Plant 8 by removing the top one-inch layer. The use of the system addressed the requirement for site disposition of concrete in the Muffle Furnace Area as per the Operable Unit 3 ROD.

**Point of Contact:**

**User Program POC:**

Mr. Bob Danner (DOE-FN) - Tel. 513-648-3167

**OST Program POC:**

Mr. Steve Bossart (DOE/FETC) - Tel. 304-285-4643

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

Surface Remediation Specialists (formerly, Concrete Cleaning, Inc.).

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$255

(Outside Funding: \$27)

**Other Deployments:**

- Deployed (type: Non-DOE) in FY 1997 at Parks Township (NRC site) in Parks Township, PA
- Deployed (type: DOE) in FY 1998 at Fernald Environmental Management Project (Plant 9) in Fernald, OH

## Centrifugal Shot Blast System

(OST Ref. No. 1851)

Centrifugal Shot Blasting is an abrasive blasting technology that propels hardened steel shot at a rate of speed high enough to remove concrete and concrete coatings from floors. The depth of removal is determined by the rate of speed at which the machine is traveling and the volume and size of shot used. The steel shot is recycled and reused until it is too small to be useable.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Fernald Environmental Management Project, Plant 8

**Project Name:** OH-FN-02, Facility D&D

**Date of Deployment:** July - August 1998      **Technology User:** Fluor Daniels Fernald

**Deployment Value/Impact:** The Centrifugal Shot Blast system was deployed at the Fernald Plant 9 for decontamination of concrete floor. Satisfies, in a cost-effective manner, agreement between Fernald and Ohio EPA to remove one-inch of concrete. The agreement eliminates the requirement for Fernald to conduct post-decontamination surveying.

**Point of Contact:**

**User Program POC:**

Mr. Bob Danner (DOE-FN) - Tel. 513-648-3167

**OST Program POC:**

Steve Bossart (DOE/FETC) - Tel. 304-285-4643

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

Surface Remediation Specialists (formerly, Concrete Cleaning, Inc.).

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$255

(Outside Funding: \$27)

**Other Deployments:**

- Deployed (type: Non-DOE) in FY 1997 at Parks Township (NRC site) in Parks Township, PA
- Deployed (type: DOE) in FY 1998 at Fernald Environmental Management Project (Plant 8) in Fernald, OH



## Personal Ice Cooling System (PICS)

(OST Ref. No. 1898)

The Personal Ice Cooling System (PICS) is a self-contained core body temperature control system that uses tap water ice as a coolant and circulates that coolant through tubing that is incorporated into a durable and comfortable shirt or vest. The shirts and vests are available in a variety of sizes. Water is frozen in bottles that are worn outside of Anti-Cs in a sealed, insulated bag. These are then incorporated with a circulating pump which are both attached to a comfortable support harness system. The rate adjustable, battery powered pump circulate the coolant via an umbilical cord with an Anti-Cs pass through connector which is connected to the tubing in the garment. This design allows for ease of changing the coolant when it has expired as well as allowing for the adjustment of cooling, while providing a barrier to the passing of contaminants to the worker. The rate adjustment, 'OFF-LO-HI,' allows the worker to adjust cooling based on work load or personal preference. The total weight of the system with a two liter bottle of frozen water is 13 pounds. It is expected that the shirt or vest would be worn under the first layer of Anti-Cs and remain uncontaminated. As such, normal laundering could be used to allow for ready reuse. The external components of the shirt or vest, such as the harness, bottle, pump, and insulating bag, can remain in the contaminated area until the work is complete. Coolant circulation tubing connections are all of the quick-connect type and leak proof, and are self sealing when disconnected.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Fernald Environmental Management Project; site-wide

**Project Name:** OH-FN-01; Facility Shutdown & OH-FN-02; Facility D&D

**Date of Deployment:** June - August 1998      **Technology User:** Fluor Daniel Fernald site remediation and other Fernald D&D subcontractors

**Deployment Value/Impact:** As a result of its successful demonstration at Fernald Building 68 in FY1997, the Fernald Environmental Management Project purchased ten PICS units for use by site remediation crews. These units increase worker productivity and comfort, and decrease cost compared to baseline heat stress management technology. For temperatures between 70-80 degrees F, cost savings for PICS were 39%; for temperatures greater than 85 degrees F, savings were 66% with an equipment payback time of 9 hours. One hundred additional suits were purchased in late FY98 for complex-wide distribution in FY99.

**Point of Contact:**

**User Program POC:**

Mr. Robert F. Danner (DOE/FN) - Tel. 513-648-3167

**OST Program POC:**

Harold Shoemaker (DOE/FETC) - Tel. 304-285-4715

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

DELTA TEMAX, Inc.

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$140

**Other Deployments:**

No other deployments identified in FY 1998

## Surface Contamination Monitor and Survey Information Management System (SCM/SIMS)

(OST Ref. No. 1942)

The SCM/SIMS is a motorized characterization and data analysis system for surveying contaminated floor and wall surfaces. Utilizing a position-sensitive gas-proportional counter (PSPC), 400 radiation measurements are taken in an area of 1 sq. meter. Survey data and sample location are logged electronically as well as displayed on an LCD screen for the operator. The data from each survey is analyzed by the SIMS to obtain visual representations of the surfaces surveyed, to generate a data report detailing the actual numerical results, and to overlay the data into a CAD drawing. The SCM/SIMS was demonstrated for beta/gamma at CP-5 in December 1996. In March 1997 at C-Reactor, the system was shown to be a versatile platform for a contamination measurement including the application of the PSPC for alpha contamination.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Argonne National Laboratory - East (301 Hot Cell Facility)

**Project Name:** CH-ANLEDD; ANL-E D&D Actions

**Date of Deployment:** February 1998

**Technology User:** Argonne National Laboratory

**Deployment Value/Impact:** Used to survey floors at the 301 Hot-cell Facility. This technology significantly saved on labor costs, but more significantly it provided more detailed characterization data, better resolution, and more rapid results.

**Point of Contact:**

**User Program POC:**

- Mr. Michael Ferrigan (DOE/CH) - Tel. 630-252-2570
- Mr. Alan L. Justice (ANL) - Tel. 630-252-3319

**OST Program POC:**

Steve Bossart (DOE/FETC) - Tel. 304-285-4643

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

Shonka Research Associates

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$101

**Other Deployments:**

- Deployed (type: DOE) in FY 1997 at Hanford (105 C-reactor) in Richland, WA
- Deployed (type: Non-DOE) in FY 1997 at BONUS Research Reactor in , PR
- Deployed (type: DOE) in FY 1997 at Idaho National Engineering and Environmental Laboratory (Air Support Building) in Idaho Falls, ID
- Deployed (type: DOE) in FY 1997 at Oak Ridge Institute of Science and Education (N/A) in Oak Ridge, TN
- Deployed (type: DOE) in FY 1998 at Argonne National Lab (Zero Production Reactor/ATSR) in Argonne, IL
- Deployed (type: Non-DOE) in FY 1998 at Connecticut Yankee Nuclear Power Station (Turbine building and exterior paved surfaces) in East Hampton , CT
- Deployed (type: DOE) in FY 1998 at Rocky Flats Environmental Technology Site (Building 123) in Golden, CO
- Deployed (type: DOE) in FY 1998 at Hanford (DR Reactor) in Richland, WA
- Deployed (type: DOE) in FY 1998 at Hanford (108-F Facility) in Richland, WA

## Surface Contamination Monitor and Survey Information Management System (SCM/SIMS)

(OST Ref. No. 1942)

The SCM/SIMS is a motorized characterization and data analysis system for surveying contaminated floor and wall surfaces. Utilizing a position-sensitive gas-proportional counter (PSPC), 400 radiation measurements are taken in an area of 1 sq. meter. Survey data and sample location are logged electronically as well as displayed on an LCD screen for the operator. The data from each survey is analyzed by the SIMS to obtain visual representations of the surfaces surveyed, to generate a data report detailing the actual numerical results, and to overlay the data into a CAD drawing. The SCM/SIMS was demonstrated for beta/gamma at CP-5 in December 1996. In March 1997 at C-Reactor, the system was shown to be a versatile platform for a contamination measurement including the application of the PSPC for alpha contamination.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Rocky Flats Environmental Technology Site; Golden, CO (Building 123)

**Project Name:** RF014; Industrial Zone Closure Project

**Date of Deployment:** August 1998

**Technology User:** Safe Sites

**Deployment Value/Impact:** Conducted final release survey of 750 sq. meters of floor and wall surfaces in Building 123. This technology provided faster and more detailed characterization reports than baseline sampling and analytical methods.

**Point of Contact:**

**User Program POC:**

- Mr. Gary Huffman (DOE/RF) - Tel. 303-966-7490
- Mr. Robert Morris (Safe Sites of Colorado) - Tel. 303-966-6468

**OST Program POC:**

Steve Bossart (DOE/FETC) - Tel. 304-285-4643

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

Shonka Reserach Associates

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$101

**Other Deployments:**

- Deployed (type: DOE) in FY 1997 at Hanford (105 C-reactor) in Richland, WA
- Deployed (type: Non-DOE) in FY 1997 at BONUS Research Reactor in , PR
- Deployed (type: DOE) in FY 1997 at Idaho National Engineering and Environmental Laboratory (Air Support Building) in Idaho Falls, ID
- Deployed (type: DOE) in FY 1997 at Oak Ridge Institute of Science and Education (N/A) in Oak Ridge, TN
- Deployed (type: DOE) in FY 1998 at Argonne National Lab (Zero Production Reactor/ATSR) in Argonne, IL
- Deployed (type: DOE) in FY 1998 at Argonne National Lab (301 Hot Cell facility) in Argonne, IL
- Deployed (type: Non-DOE) in FY 1998 at Connecticut Yankee Nuclear Power Station (Turbine building and exterior paved surfaces) in East Hampton , CT
- Deployed (type: DOE) in FY 1998 at Hanford (DR Reactor) in Richland, WA
- Deployed (type: DOE) in FY 1998 at Hanford (108-F Facility) in Richland, WA

## Surface Contamination Monitor and Survey Information Management System (SCM/SIMS)

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### DESCRIPTION OF THE DEPLOYMENT

**Location:** Hanford; Richland Washington (DR Reactor)

**Project Name:** RL-ER06, Decontamination & Decommissioning

**Date of Deployment:** Fiscal Year 1998      **Technology User:** Bechtel Hanford, Inc.

**Deployment Value/Impact:** Surveyed 800 sq. meters of floor surface in the DR Reactor Facility. SCM provided faster and more detailed characterization reports.

**Point of Contact:**

**User Program POC:**

Mrs. Shannon N. Saget (DOE-RL) - Tel. 509-372-4029

**OST Program POC:**

John Duda (DOE/FETC) - Tel. 304-285-4217

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

Shonka Research Associates

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$101

**Other Deployments:**

- Deployed (type: DOE) in FY 1997 at Hanford (105 C-reactor) in Richland, WA
- Deployed (type: Non-DOE) in FY 1997 at BONUS Research Reactor in , PR
- Deployed (type: DOE) in FY 1997 at Idaho National Engineering and Environmental Laboratory (Air Support Building) in Idaho Falls, ID
- Deployed (type: DOE) in FY 1997 at Oak Ridge Institute of Science and Education (N/A) in Oak Ridge, TN
- Deployed (type: DOE) in FY 1998 at Argonne National Lab (Zero Production Reactor/ATSR) in Argonne, IL
- Deployed (type: DOE) in FY 1998 at Argonne National Lab (301 Hot Cell facility) in Argonne, IL
- Deployed (type: Non-DOE) in FY 1998 at Connecticut Yankee Nuclear Power Station (Turbine building and exterior paved surfaces) in East Hampton , CT
- Deployed (type: DOE) in FY 1998 at Rocky Flats Environmental Technology Site (Building 123) in Golden, CO
- Deployed (type: DOE) in FY 1998 at Hanford (108-F Facility) in Richland, WA

## Surface Contamination Monitor and Survey Information Management System (SCM/SIMS)

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### DESCRIPTION OF THE DEPLOYMENT

**Location:** Connecticut Yankee Nuclear Power Station; East Hampton, CT

**Project Name:** NA - Non-DOE deployment

**Date of Deployment:** November 1997

**Technology User:** Connecticut Yankee

**Deployment Value/Impact:** Used to survey Turbine building and exterior paved surfaces. Over 260,000 sq. ft. was surveyed, and nine previously unidentified contaminated locations were identified.

**Point of Contact:**

**User Program POC:**

Mr. Richard Sexton (Connecticut Yankee  
Nuclear Power Station) - Tel. 860-267-3947

**OST Program POC:**

Steve Bossart (DOE/FETC) - Tel. 304-285-4643

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

Shonka Research Associates

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$101

**Other Deployments:**

- Deployed (type: DOE) in FY 1997 at Hanford (105 C-reactor) in Richland, WA
- Deployed (type: Non-DOE) in FY 1997 at BONUS Research Reactor in , PR
- Deployed (type: DOE) in FY 1997 at Idaho National Engineering and Environmental Laboratory (Air Support Building) in Idaho Falls, ID
- Deployed (type: DOE) in FY 1997 at Oak Ridge Institute of Science and Education (N/A) in Oak Ridge, TN
- Deployed (type: DOE) in FY 1998 at Argonne National Lab (Zero Production Reactor/ATSR) in Argonne, IL
- Deployed (type: DOE) in FY 1998 at Argonne National Lab (301 Hot Cell facility) in Argonne, IL
- Deployed (type: DOE) in FY 1998 at Rocky Flats Environmental Technology Site (Building 123) in Golden, CO
- Deployed (type: DOE) in FY 1998 at Hanford (DR Reactor) in Richland, WA
- Deployed (type: DOE) in FY 1998 at Hanford (108-F Facility) in Richland, WA

## Surface Contamination Monitor and Survey Information Management System (SCM/SIMS)

(OST Ref. No. 1942)

The SCM/SIMS is a motorized characterization and data analysis system for surveying contaminated floor and wall surfaces. Utilizing a position-sensitive gas-proportional counter (PSPC), 400 radiation measurements are taken in an area of 1 sq. meter. Survey data and sample location are logged electronically as well as displayed on an LCD screen for the operator. The data from each survey is analyzed by the SIMS to obtain visual representations of the surfaces surveyed, to generate a data report detailing the actual numerical results, and to overlay the data into a CAD drawing. The SCM/SIMS was demonstrated for beta/gamma at CP-5 in December 1996. In March 1997 at C-Reactor, the system was shown to be a versatile platform for a contamination measurement including the application of the PSPC for alpha contamination.

### DESCRIPTION OF THE DEPLOYMENT

<b>Location:</b>	Hanford; Richland, WA (108-F Facility)		
<b>Project Name:</b>	RL-ER06; Decontamintaion & Decommissioning		
<b>Date of Deployment:</b>	Fiscal Year 1998	<b>Technology User:</b>	Bechtel Hanford, Inc.
<b>Deployment Value/Impact:</b> Surveyed 1,500 sq. meters at the Hanford 108-F Faciliy and detected the presence of plutonium in areas previously thought to be clean.			
<b>Point of Contact:</b>			
<b>User Program POC:</b> Mrs. Shannon N. Saget (DOE-RL) - Tel. 509-372-4029		<b>OST Program POC:</b> John Duda (DOE/FETC) - Tel. 304-285-4217	

### TECHNOLOGY DEVELOPMENT INFORMATION

#### Major Developers:

Shonka Research Associates

#### Funding Information: (\$ in Thousands):

Total Estimated Funding: \$101

#### Other Deployments:

- Deployed (type: DOE) in FY 1997 at Hanford (105 C-reactor) in Richland, WA
- Deployed (type: Non-DOE) in FY 1997 at BONUS Research Reactor in Rincon, PR
- Deployed (type: DOE) in FY 1997 at Idaho National Engineering and Environmental Laboratory (Air Support Building) in Idaho Falls, ID
- Deployed (type: DOE) in FY 1997 at Oak Ridge Institute of Science and Education (N/A) in Oak Ridge, TN
- Deployed (type: DOE) in FY 1998 at Argonne National Lab (Zero Production Reactor/ATSR) in Argonne, IL
- Deployed (type: DOE) in FY 1998 at Argonne National Lab (301 Hot Cell facility) in Argonne, IL
- Deployed (type: Non-DOE) in FY 1998 at Connecticut Yankee Nuclear Power Station (Turbine building and exterior paved surfaces) in East Hampton, CT
- Deployed (type: DOE) in FY 1998 at Rocky Flats Environmental Technology Site (Building 123) in Golden, CO
- Deployed (type: DOE) in FY 1998 at Hanford (DR Reactor) in Richland, WA

## ROTO PEEN Scaler and VAC PAC System

(OST Ref. No. 1943)

The RotoPEEN Scaler is an aggressive decontamination method for small areas. The Savannah River Site uses this hand-held system along with other shrouded tools to decontaminate concrete and metal surfaces. These tools, in conjunction with large-area decontamination methods, are used extensively at the SRS Decon Facility, housed in the former 105-C Reactor. The RotoPEEN Scaler is equipped with a vacuum system and HEPA filtration to minimize airborne hazards. The system does not require a large compressor and can be easily carried to any location for immediate application. The system used by SRS was purchased by Desco Manufacturing Company, one of many companies who provide RotoPEEN scalers and other decontamination tools.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Savannah River, Tank #15, 17, 20, and 40

**Project Name:** SR-HL01 through SR-HL03; Waste Removal Operations and Tank Closure

**Date of Deployment:** February - June 1998    **Technology User:** Facility  
Decommissioning  
Division

**Deployment Value/Impact:** The ROTO PEEN Scaler was used to decontaminate both a trailer and van in the Decontamination Facility that contained significant amounts of radiation. The trailer, which had hotspots in excess of 1,000,000 dpm/sq cm of beta/gamma, and the van, which had hotspots of 80,000 dpm/sq cm beta/gamma, were both decontaminated to free release.

**Point of Contact:**

**User Program POC:**

- Mr. Martin Salazar (DOE Savannah River)  
- Tel. 803-557-3617
- Ms. Heatherly Dukes (Westinghouse  
Savannah River Company) - Tel. 803-  
557-9205

**OST Program POC:**

Mr. Steve Bossart (DOE/FETC) - Tel. 304-285-  
4643

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

Desco Manufacturing Company

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$84

(Outside Funding: \$12)

**Other Deployments:**

- Deployed (type: DOE) in FY 1998 at Savannah River (SRTC (773-A)) in Aiken, SC
- Deployed (type: DOE) in FY 1997 at Savannah River Site (105-C reactor) in Aiken, SC

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(OST Ref. No. 1943)

The RotoPEEN Scaler is an aggressive decontamination method for small areas. The Savannah River Site uses this hand-held system along with other shrouded tools to decontaminate concrete and metal surfaces. These tools, in conjunction with large-area decontamination methods, are used extensively at the SRS Decon Facility, housed in the former 105-C Reactor. The RotoPEEN Scaler is equipped with a vacuum system and HEPA filtration to minimize airborne hazards. The system does not require a large compressor and can be easily carried to any location for immediate application. The system used by SRS was purchased by Desco Manufacturing Company, one of many companies who provide RotoPEEN scalers and other decontamination tools.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Savannah River, SRTC (773-A)

**Project Name:** SR-IN13; Decontamination of Lab Facilities 772-F and 773-A

**Date of Deployment:** January - October 1998  
**Technology User:** Facility Decommissioning Division

**Deployment Value/Impact:** The ROTO PEEN Scaler was used to decontaminate both a trailer and van in the Decontamination Facility that contained significant amounts of radiation. The trailer, which had hotspots in excess of 1,000,000 dpm/sq cm of beta/gamma, and the van, which had hotspots of 80,000 dpm/sq cm beta/gamma, were both decontaminated to free release.

**Point of Contact:**

**User Program POC:**

- Mr. Martin Salazar (DOE Savannah River) - Tel. 803-557-3617
- Ms. Heatherly Dukes (Westinghouse Savannah River Company) - Tel. 803-557-9205

**OST Program POC:**

Mr. Steve Bossart (DOE/FETC) - Tel. 304-285-4643

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

Desco Manufacturing Company

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$84

(Outside Funding: \$12)

**Other Deployments:**

- Deployed (type: DOE) in FY 1998 at Savannah River (Tanks 15, 17, 20 & 40) in Aiken, SC
- Deployed (type: DOE) in FY 1997 at Savannah River Site (105-C reactor) in Aiken, SC



# Indoor Radiation Mapping Using Laser Assisted Ranging and Data System

(OST Ref. No. 1946)

LARADS is based on the integration of an auto-tracking laser system used to conduct civil surveys with a radiological detection system. Position data and radiological survey information is taken, sent from detector to receiving station, and then combined into electronic files to provide clear, detailed, and accurate surveys. Reports can be graphical, with color-coded radiological levels overlaid on CAD drawings or on photographs.

## DESCRIPTION OF THE DEPLOYMENT

**Location:** Hanford; Richland, WA (221-B Plant)

**Project Name:** RL-TP01; B-Plant Sub-Project

**Date of Deployment:** Fiscal Year 1998

**Technology User:** Babcock and Wilcox  
Hanford

**Deployment Value/Impact:** LARADS was deployed at 221-B Plant at Hanford in combination with an Eberline E600 rate meter and a Bicorn NE FLP 3B for beta and gamma characterization of approximately 22,000 square feet of floor space in the operating galleries. LARADS was also used with GPS for beta and gamma characterization of outdoor crib areas totaling 50,000 square feet at the 221-B Plant. LARADS is a real-time surveying system that is cheaper than the baseline methods and provides reliable and accurate mapping data acceptable for regulatory review.

### Point of Contact:

#### User Program POC:

- Mrs. Shannon N. Saget (DOE-RL) - Tel. 509-372-4029
- Mr. Bernie Lueck (B&W Hanford) - Tel. 509-376-4098

#### OST Program POC:

Mr. John Duda (DOE/FETC) - 304-285-4217

## TECHNOLOGY DEVELOPMENT INFORMATION

### Major Developers:

Thermo Hanford, Inc.

### Funding Information: (\$ in Thousands):

Total Estimated Funding: \$24

### Other Deployments:

- Deployed (type: DOE) in FY 1997 at Hanford (105 C-reactor) in Richland, WA
- Deployed (type: DOE) in FY 1998 at Hanford (F Reactor) in Richland, WA
- Deployed (type: DOE) in FY 1998 at Hanford (DR Reactor) in Richland, WA
- Deployed (type: DOE) in FY 1998 at Pantex (Firing Site #5) in Amarillo, TX

# Indoor Radiation Mapping Using Laser Assisted Ranging and Data System

(OST Ref. No. 1946)

LARADS is based on the integration of an auto-tracking laser system used to conduct civil surveys with a radiological detection system. Position data and radiological survey information is taken, sent from detector to receiving station, and then combined into electronic files to provide clear, detailed, and accurate surveys. Reports can be graphical, with color-coded radiological levels overlaid on CAD drawings or on photographs.

## DESCRIPTION OF THE DEPLOYMENT

**Location:** Pantex, Firing Site #5

**Project Name:** AL014; Pantex Plant Site Remediation Project

**Date of Deployment:** August - September 1998      **Technology User:** Battelle

**Deployment Value/Impact:** LARADS performed radiological survey of a control bunker at Firing Site #5. It was able to determine areas that did not meet DOE Order 5400.5 and that required subsequent decontamination. The LARADS cost about the same to apply as baseline hand-held survey equipment, but it was much faster and was capable of 100 percent area coverage. In addition, its real-time data collection and reporting capabilities accelerated schedules at Pantex.

**Point of Contact:**

**User Program POC:**

Mr. Johnnie Guelker (DOE Pantex Office) -  
Tel. 806-477-3183

**OST Program POC:**

Mr. John Duda (DOE/FETC) - Tel. 304-285-4217

## TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

Thermo Hanford, Inc.

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$24

**Other Deployments:**

- Deployed (type: DOE) in FY 1997 at Hanford (105 C-reactor) in Richland, WA
- Deployed (type: DOE) in FY 1998 at Hanford (F Reactor) in Richland, WA
- Deployed (type: DOE) in FY 1998 at Hanford (DR Reactor) in Richland, WA
- Deployed (type: DOE) in FY 1998 at Hanford (221-B Plant) in Richland, WA

# Indoor Radiation Mapping Using Laser Assisted Ranging and Data System

(OST Ref. No. 1946)

LARADS is based on the integration of an auto-tracking laser system used to conduct civil surveys with a radiological detection system. Position data and radiological survey information is taken, sent from detector to receiving station, and then combined into electronic files to provide clear, detailed, and accurate surveys. Reports can be graphical, with color-coded radiological levels overlaid on CAD drawings or on photographs.

## DESCRIPTION OF THE DEPLOYMENT

**Location:** Hanford; Ricland, WA (F Reactor)

**Project Name:** RL-ER06; Decontamination & Decommissioning

**Date of Deployment:** Fiscal Year 1998      **Technology User:** Bechtel Hanford, Inc.

**Deployment Value/Impact:** LARADS was deployed in conjunction with an Eberline E600 rate meter and an SHP-380 detector for beta and gamma characterization and mapping of approximately 2,140 square feet of wall surfaces. LARADS is a real-time surveying system that is cheaper than the baseline methods and provides reliable and accurate mapping data acceptable for regulatory review.

**Point of Contact:**

**User Program POC:**

Mrs. Shannon N. Saget (DOE-RL) - Tel. 509-372-4029

**OST Program POC:**

Mr. John Duda (DOE/FETC) - Tel. 304-285-4217

## TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

Thermo Hanford, Inc.

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$24

**Other Deployments:**

- Deployed (type: DOE) in FY 1997 at Hanford (105 C-reactor) in Richland, WA
- Deployed (type: DOE) in FY 1998 at Hanford (DR Reactor) in Richland, WA
- Deployed (type: DOE) in FY 1998 at Pantex (Firing Site #5) in Amarillo, TX
- Deployed (type: DOE) in FY 1998 at Hanford (221-B Plant) in Richland, WA

# Indoor Radiation Mapping Using Laser Assisted Ranging and Data System

(OST Ref. No. 1946)

LARADS is based on the integration of an auto-tracking laser system used to conduct civil surveys with a radiological detection system. Position data and radiological survey information is taken, sent from detector to receiving station, and then combined into electronic files to provide clear, detailed, and accurate surveys. Reports can be graphical, with color-coded radiological levels overlaid on CAD drawings or on photographs.

## DESCRIPTION OF THE DEPLOYMENT

**Location:** Hanford; Richland, WA (DR Reactor)

**Project Name:** RL-ER06; Decontamination & Decommissioning

**Date of Deployment:** Fiscal Year 1998      **Technology User:** Bechtel Hanford, Inc.

**Deployment Value/Impact:** LARADS was deployed at DR Reactor with an EberlineE600 rate meter and an SHP-380 detector for beta and gamma characterization and mapping of approximately 5400 square feet of wall surface. LARADS is a real-time surveying system that is cheaper than the baseline methods and provides reliable and accurate mapping data acceptable for regulatory review.

**Point of Contact:**

**User Program POC:**

Mrs. Shannon N. Saget (DOE-RL) - Tel. 509-372-4029

**OST Program POC:**

Mr. John Duda (DOE/FETC) - 304-285-4217

## TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

Thermo Hanford, Inc.

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$24

**Other Deployments:**

- Deployed (type: DOE) in FY 1997 at Hanford (105 C-reactor) in Richland, WA
- Deployed (type: DOE) in FY 1998 at Hanford (F Reactor) in Richland, WA
- Deployed (type: DOE) in FY 1998 at Pantex (Firing Site #5) in Amarillo, TX
- Deployed (type: DOE) in FY 1998 at Hanford (221-B Plant) in Richland, WA

# System for Tracking Remediation, Exposure, Activities and Materials (STREAM)

(OST Ref. No. 1947)

The System for Tracking Remediation, Exposure, Activities and Materials (STREAM) developed by Delphinus Engineering, is a computer application management tool for planning and tracking D&D related projects. STREAM is a tool for managers and staff to enhance productivity, safety, and ALARA principles, help ensure compliance, improve communications and training, and assist the engineering, planning, operations and waste handling organizations throughout the life cycle of a project.

## DESCRIPTION OF THE DEPLOYMENT

**Location:** Chernobyl, Unit 4 Shelter Project

**Project Name:** NA - Non-DOE Deployment

**Date of Deployment:** Fiscal Year 1998      **Technology User:** Non-DOE

**Deployment Value/Impact:** Managed and tracked D&D projects in a more organized, efficient, and effective manner at the Chernobyl Unit 4 Shelter Project while ensuring worker safety, understanding, and satisfaction.

**Point of Contact:**

**User Program POC:**

- Mr. Kelly Neal (Batelle Pacific Northwest National Laboratory) - Tel. 509-376-8830
- Roby Lentz (Delphinus Engineering) - 610-874-9160

**OST Program POC:**

John Duda (DOE/FETC) - 304-285-4217

## TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

Delphinus Engineering

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$379

**Other Deployments:**

- Deployed (type: DOE) in FY 1997 at Hanford (105 C-reactor) in Richland, WA
- Deployed (type: DOE) in FY 1997 at Savannah River Site (Heavy Water Component Test Reactor) in Aiken, SC

## Concrete Shaver

(OST Ref. No. 1950)

The Concrete Shaver, developed by Marcris Industries, Ltd., is a self-propelled, electric powered, diamond shaving machine used for concrete and coating removal. The unit has a 10-in-wide shaving drum suitable for flat and slightly curved walls and floors, and a vacuum port for dust extraction. Its cutting depth can vary from 0 to 1/2-in, and can shave within 3 inches of a wall/floor interface or other obstruction. The cutting depth is set by a manual rotary wheel linked to a digital display. The shaving drum can be configured with a variety of diamond-impregnated blades depending on the desired surface finish.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Hanford; Richland, WA (105-C Reactor)

**Project Name:** RL-ER06; Decontamination and Decommissioning

**Date of Deployment:** December 1997      **Technology User:** Bechtel Hanford, Inc.

**Deployment Value/Impact:** Used to decontaminate concrete surfaces during the 105-C Reactor Interim Safe Storage project to free release levels.

**Point of Contact:**

**User Program POC:**

Mrs. Shannon N. Saget (DOE-RL) - Tel. 509-372-4029

**OST Program POC:**

John Duda (DOE/FETC) - Tel. 304-285-4217

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

Marcris Industries, Limited

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$137

**Other Deployments:**

No additional deployments have been identified

## Corrosion Probe

(OST Ref. No. 1985)

High-level waste stored in carbon steel tanks located at Hanford and Savannah River Site may be subject to corrosion from nitrate ions. Corrosion prevention for these tanks is based on controlling the tank chemistry by adding an inhibitor solution. Inhibitor additions are based on waste sample analysis and can increase waste volume significantly. The corrosion probe was developed to limit the amount of inhibitors added, and provide continuous, rather than periodic data.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Hanford, Tank AN-102

**Project Name:** RL-TW04 Hanford Tanks Retrieval Project

**Date of Deployment:** September 1, 1998 to Present      **Technology User:** Project Hanford Management Company

**Deployment Value/Impact:** The use of a corrosion probe in carbon steel tanks helps control the chemistry of the waste in tanks. Controlling the chemistry inside the tanks reduces baseline sampling and laboratory costs, reduces personnel radiation exposure, and minimizes waste volume by not introducing more inhibitor solution than necessary into the tanks. Any material added to the tanks is material that must be removed and treated at a later date.

**Point of Contact:**

**User Program POC:**

Cathy Louie, DOE-RL (509) 376-6834

**OST Program POC:**

Ted Pietrok, DOE-RL, (509) 372-4546

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

The probe array was developed by Lockheed Martin Hanford Company in cooperation with Pacific Northwest National Laboratory, Oak Ridge National Laboratory, and the Savannah River Technology Center. Additional probe design, fabrication, and testing was done by HiLine Engineering and Fabrication

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$1,295

**Other Deployments:**

Deployed in FY 1997 at Hanford (Tank 241-AZ-107) in Richland, WA

## AEA Fluidic Samplers

(OST Ref. No. 2007)

The AEA fluidic sampler safely samples radioactive waste from DOE's large underground tanks. The fluidic sampler includes a reverse flow diverter pump with a specially designed sampling tee installed in the discharge piping that delivers a sample of the liquid through a sample needle to a sample bottle. The Fluidic Sampler can be deployed in storage tanks and process tanks to retrieve samples while the tank mixing is underway, providing more representative sampling with very low worker exposure.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Savannah River Site, Tank 48

**Project Name:** SR-HL01 - H Tank Farm SR-HL02 - F Tank Farm

**Date of Deployment:** August 1998

**Technology User:** Westinghouse  
Savannah River  
Company

**Deployment Value/Impact:** The fluidic sampler began deployment in Tank 48 at the Savannah River Site for sampling in-tank precipitation waste. The sampler has been installed in the tank, but operation is on hold pending the approval of the SAR (Safety Analysis Report). The sampler solves a number of the problems associated with current tank sampling methods, including a safer mode of operation and lowered worker risk/exposure, reduced sampler maintenance, safer and easier ultimate disposal, and improved sample representativeness.

**Point of Contact:**

**User Program POC:**

Thomas S. Gutmann, DOE-SR, (803) 208-7408

**OST Program POC:**

Ted Pietrok, DOE-RL, (509) 372-4546

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

AEA Technology

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$545

**Other Deployments:**

No previous DOE deployments.



# Thermal Oxidation of Organics Using Catalytic Chemical Oxidation

(OST Ref. No. 2040)

Catalytic Chemical Oxidation offers an alternative to incineration for the treatment of combustible mixed low-level waste (MLLW). Chemical oxidation systems use the reaction of oxygen, or an alternate oxidizing agent, to destroy the organic constituents of a waste in aqueous solution. In catalytic chemical oxidation (CCO), one or more chemical species are added, which act to increase the rate at which the oxidation reactions proceed.

## DESCRIPTION OF THE DEPLOYMENT

**Location:** DOE - Oakland, Lawrence Berkeley National Laboratory,

**Project Name:** 4 waste stream at LBNL (LB-W001, LB-W002, LB-W004, and LB-W008)

**Date of Deployment:** May 1998

**Technology User:** Lawrence Berkley National Laboratory (LBNL)

**Deployment Value/Impact:** This technology eliminated organics from 15.3 liters of highly tritiated mixed waste streams at LBNL. Because of the high levels of tritium activity, these waste streams could not be treated in DOE or ther commercial facilities. LBNL had these wastes delisted by the state of California so that LBNL can manage these wastes as low-level waste. The thermal oxidation of organics using catalytic chemical oxidation was applied to four mixed waste streams at LBNL.

**Point of Contact:**

**User Program POC:**

Ms. Kim V. Abbott (DOE-Oakland) - Tel. 510-637-1501

**OST Program POC:**

Mr. Bill Owca, DOE-ID, (208) 526-1983

## TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

Lawrence Berkley National Laboratory (LBNL)

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$91

**Other Deployments:**

None

## GAAT Tank Isolation

(OST Ref. No. 2093)

The GAAT Tank Isolation technology is a pipe plugging end-effector deployed using the Modified Light Duty Utility Arm inside the gunite and associated tanks (GAAT) at the Oak Ridge Reservation. The walls of each gunite tank contain several openings; these openings are for pipes that were used to deliver radioactive waste to the tanks. During rainstorms, water leaks through these pipes and into the tanks. Capping the pipes external to the tank has not proven successful in the past. After retrieval, the pipelines must be permanently sealed from inside the tank to prevent water from leaking into the tanks and to enable closure of the tanks.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Oak Ridge Reservation, Gunite and Associated Tanks, Tank W-6

**Project Name:** OR-43203 - Bethel Valley Watershed

**Date of Deployment:** May 1998

**Technology User:** Lockheed Martin

**Deployment Value/Impact:** The wall of each gunite tank at the Oak Ridge Reservation contains several openings; these openings are for pipes that were used to deliver radioactive slurry waste to the tanks. During rainstorms, water leaks through these pipes and into the tanks. The pipelines need to be plugged to prevent water from leaking into the tanks after retrieval and closure activities are finished. Capping the pipes external to the tank has not proven successful in the past. This technology enables closure of tanks from which waste has been retrieved.

**Point of Contact:**

**User Program POC:**

Jacquie Noble-Dial, DOE-OR, (423) 241-6184

**OST Program POC:**

Ted Pietrok, DOE-RL, (509) 372-4546

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

- Oak Ridge National Laboratory
- Pacific Northwest National Laboratory

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$670

**Other Deployments:**

None

## In Situ Object Counting System

(OST Ref. No. 2098)

The In Situ Object Counting System (ISOCS) is a Germanium-detector gamma-ray characterization system that can identify specific nuclei, and quantitatively determine the corresponding radioactive inventory in situ. ISOCS response to a series of point sources surrounding it have been characterized using a Monte Carlo code. The steel-jacketed lead shielding can be mounted around the Germanium detector to provide 1 or 2 inches of shielding from background radiation, and to change the field of view between 30, 90, or 180 degrees. The detector rotates on the cart for alignment with the target. The computer controls the InSpector multichannel analyzer and the Genie-PC software provides peak identification, data and error analysis, and system quality assurance. The ISOCS software is the key feature of the system in that it automatically determines the relationship between the radioactive source geometry, the measured count rate, and the amount of radioactive material present using the ISOCS characterized detector data.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Argonne National laboratory - East, 301 Hot Cell Facility

**Project Name:** CH-ANLEDD; D&D Actions

**Date of Deployment:** April 1998

**Technology User:** Argonne National Laboratory

**Deployment Value/Impact:** ISOCS was used to characterize the 301 Hot Cell facility floor. It showed significant improvement over baseline surveying techniques for the detection of cesium. Using ISOCS eliminated the need for gamma spectroscopy which would have resulted in delays and been more expensive.

**Point of Contact:**

**User Program POC:**

Mr. Michael Ferrigan (DOE-Chicago Operations Office) - Tel. 630-252-2570

**OST Program POC:**

Steve Bossart (DOE/FETC) - Tel. 304-285-4643

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

Canberra Industries, Inc.

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$27

**Other Deployments:**

No other DOE deployments have been verified to date

## Remote Control Concrete Demolition System

(OST Ref. No. 2100)

The Remote Control Demolition System (Brokk BM 150) uses a remote operated articulated hydraulic boom with various tool head attachments to perform the work. The machine is designed primarily to drive a hammer and has a reach of fifteen feet. The Brokk can be operated by someone 400 feet away or in a different room with a TV monitor. The machine can be operated up to a 30 degree gradient. The unit requires a 480 volt, 50 amp circuit for its power source. The system was deployed using two attachments; a hydraulic hammer, which operates at 600 foot pounds and has an output of 1000 to 1500 beats per minute, and an excavating bucket with a smooth cutting edge and capacity of 1/4 cubic yards. Other attachments available include a concrete crusher, a La Bounty Shear, and a 1/4 cubic yard clamshell bucket.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Argonne National Laboratory-East; Argonne, IL (CP-5 Reactor Facility)

**Project Name:** CH-ANLEDD; ANL-E D&D Actions

**Date of Deployment:** March 1998

**Technology User:** Argonne National Laboratory

**Deployment Value/Impact:** The BROKK system, originally demonstrated at the Argonne Janus Reactor, was used at CP-5 to size reduce and dismantle the reactor internals. This remote application reduced worker exposure and PPE requirements during D&D. The BROKK also is faster than baseline manual size reduction techniques.

**Point of Contact:**

**User Program POC:**

Mr. Mike Ferrigan (DOE/CH) - Tel. 630-252-2570

**OST Program POC:**

Steve Bossart (DOE/FETC) - Tel. 304-285-4643

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

Manufactured by Holmhed Systems AB of Sweden and supplied by Duane Equipment Corp.

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$30

**Other Deployments:**

No additional deployments have been identified.

## Concrete Grinder

(OST Ref. No. 2102)

The Concrete Grinder, developed by CS Unitec, Inc., is a lightweight, handheld concrete and coating removal tool for decontaminating or stripping concrete surfaces. The Concrete Grinder (LD 1509 FR) includes a 5-inch diamond grinding wheel that operates at 10,000 rpm and a vacuum port for dust suppression. It is suitable for flat or slightly curved walls and floors and can be used for radiological decontamination of large areas or hot spots. It weighs about 6 pounds and is powered by an electric motor.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Hanford; Richland, WA (105-C Reactor: South Water & Gas Tunnel Areas)

**Project Name:** RL-ER06; Decontamination and Decommissioning

**Date of Deployment:** January 1998

**Technology User:** Bechtel Hanford, Inc.

**Deployment Value/Impact:** The Concrete Diamond Grinder was deployed at Hanford's C Reactor in the South Water Tunnel area for decontamination of 54 square feet of wall surface, and in the Gas Tunnel Area to decontaminate 32 sq. feet of wall surface. 1,600 sq. feet was also decontaminated in the Outer Rod Room of the 105-C Reactor facility using the Concrete Grinder. Surfaces were decontaminated to free release levels.

**Point of Contact:**

**User Program POC:**

**OST Program POC:**

- Ms. Shannon Saget (DOE/RL) - Tel. 509-372-4029
  - Mr. Jeff Bruggeman (DOE-RL) - Tel. 509-376-7121
- John Duda (DOE/FETC) - Tel. 304-285-4217

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

CS Unitec, Inc.

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$145

**Other Deployments:**

No additional deployments have been identified.

## RESRAD-Build

(OST Ref. No. 2103)

The RESRAD-BUILD, developed by Argonne National Laboratory, estimates exposure/dose to a hypothetical receptor due to a radiologically contaminated building or structure. The RESRAD-BUILD technology was used to run four different scenarios at various time intervals and various radionuclides levels. Sensitivity of the model for few of the model parameters was also conducted by using a range for each parameter. An additional model--Microshield--was run to perform comparisons to RESRAD-BUILD for external exposure pathway prediction for the same geometry and assumptions. The comparison evaluated the possibility of using an exposure/dose assessment model to establish compliance with release limits (15 mrem/y) established for decontamination and decommissioning (D&D) of buildings and structures at DOE facilities and C Reactor.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Hanford; Richland, WA (105-C Reactor: Gas & Water Tunnel piping)

**Project Name:** RL-ER06; Decontamination and Decommissioning

**Date of Deployment:** October 1997

**Technology User:** Bechtel Jacobs

**Deployment Value/Impact:** RESRAD-BUILD was used as part of the 105-C Reactor Interim Safe Storage project to free release (piping in) the Gas and Water Tunnel Areas. The system was used as a planning tool to determine that certain structures and piping posed low hazards and could thus remain in place. This resulted in significant cost savings compared to the baseline approach of demolition and disposal of the structural material.

**Point of Contact:**

**User Program POC:**

- Ms. Shannon Saget (DOE/RL) - Tel. 509-372-4029
- Mr. Jeff Bruggeman (DOE-RL) - Tel. 509-376-7121

**OST Program POC:**

John Duda (DOE/FETC) - Tel. 304-285-4217

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

Argonne National Laboratory

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$10

**Other Deployments:**

No additional deployments have been identified.

## Wireless Remote Monitoring System

(OST Ref. No. 2104)

The RadStar Wireless Remote Monitoring System, developed by SAIC, monitors personnel dose and area exposure rate remotely from a predetermined command center located outside radioactively contaminated areas. A host personal computer monitors and records information transmitted from electronic dosimeters and collected by a transceiver base station using RadStar software. A radio transceiving alarming electronic dosimeter, wireless radio components, radiation detector, and a 9-V alkaline battery are contained in a small case worn by personnel. A dosimeter reader reads the dosimeters and resets them after use. The monitor weighs less than 400 g and is designed for gamma detection. Each dosimeter can be preset to alarm at a set point with either an audible alarm or light-emitting diode and will warn both the worker and the base station. Straight line signals can be transmitted over 10,000 ft.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Hanford: Richland, WA (N Basin Project)

**Project Name:** RL-ER09; N Area Deactivation & RL-ER06; Decontamination and Decommissioning

**Date of Deployment:** September 1998

**Technology User:** Bechtel Hanford, Inc.

**Deployment Value/Impact:** Used for monitoring of highly contaminated areas in the N Basin. The system provided real-time monitoring of worker dose levels, helping reduce the risk of worker exposure.

**Point of Contact:**

**User Program POC:**

Mrs. Shannon N. Saget (DOE-RL) - Tel. 509-372-4029

**OST Program POC:**

John Duda (DOE/FETC) - Tel. 304-285-4217

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

Science Applications International Corporation

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$61

**Other Deployments:**

- Deployed (type: DOE) in FY 1998 at Hanford (C Reactor) in Richland, WA
- Deployed (type: Non-DOE) in FY 1997 at Cooper Nuclear Power Station (Steam turbine building) in Brownville, NE
- Deployed (type: DOE) in FY 1998 at Hanford (U-Plant) in Richland, WA

## Wireless Remote Monitoring System

(OST Ref. No. 2104)

The RadStar Wireless Remote Monitoring System, developed by SAIC, monitors personnel dose and area exposure rate remotely from a predetermined command center located outside radioactively contaminated areas. A host personal computer monitors and records information transmitted from electronic dosimeters and collected by a transceiver base station using RadStar software. A radio transceiving alarming electronic dosimeter, wireless radio components, radiation detector, and a 9-V alkaline battery are contained in a small case worn by personnel. A dosimeter reader reads the dosimeters and resets them after use. The monitor weighs less than 400 g and is designed for gamma detection. Each dosimeter can be preset to alarm at a set point with either an audible alarm or light-emitting diode and will warn both the worker and the base station. Straight line signals can be transmitted over 10,000 ft.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Hanford; Richland, WA (105-C Reactor)

**Project Name:** RL-ER06; Decontamination & Decommissioning

**Date of Deployment:** November 1997

**Technology User:** Bechtel Hanford, Inc.

**Deployment Value/Impact:** Used at C-Reacto to monitor environmental conditions and worker performance conditions in high-dose areas during D&D activities. The system provided real-time monitoring of worker dose levels, helping reduce the risk of worker exposure.

**Point of Contact:**

**User Program POC:**

Mrs. Shannon N. Saget (DOE-RL) - Tel. 509-372-4029

**OST Program POC:**

John Duda (DOE/FETC) - Tel. 304-285-4217

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

Science Applications International Corporation

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$61

**Other Deployments:**

- Deployed (type: DOE) in FY 1998 at Hanford (N Basin Project) in Richland, WA
- Deployed (type: Non-DOE) in FY 1997 at Cooper Nuclear Power Station (Steam turbine building) in Brownville, NE
- Deployed (type: DOE) in FY 1998 at Hanford (U-Plant) in Richland, WA



## Tank Waste Conveyance System

(OST Ref. No. 2116)

The Tank Waste Conveyance System combines a hose management system and a jet pump to retrieve sludges from the Department of Energy's radioactive waste storage tanks. Typically, these sludges are difficult to remove and convey. After a high-pressure water cutting jet loosens sludge from the tank bottoms the sludge is directed into a hose controlled by the Hose Management Arm. A jet pump then removes the sludge and liquids from the tanks. The entire system is moved around inside the tanks by a robotic arm or vehicle. Overview cameras in the tanks and cameras located on the robotic arm and vehicle provide equipment operators a view of the tank interiors and waste removal activities.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Oak Ridge, GAAT, Tank W-6

**Project Name:** OR-43203, Bethel Valley Remedial Action, Gunite and Associated Tanks Treatability Study (GAATTS)

**Date of Deployment:** February 1998

**Technology User:** Lockheed Martin Energy Systems

**Deployment Value/Impact:** Under the GAATTS, Oak Ridge is removing sufficient waste from tanks to allow the tanks to be closed and enable progress on the restoration of the Bethel Valley watershed. The tank waste conveyance system provides the capability to move the retrieved waste out of the tank and into staging areas for treatment.

**Point of Contact:**

**User Program POC:**

Jacquie Noble-Dial, DOE-OR, (423) 241-6184

**OST Program POC:**

Ted Pietrok, DOE-RL, (509) 372-4546

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

- Waterjet Technologies Inc.
- Pacific Northwest National Laboratories

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$2,016

**Other Deployments:**

- FY 1997 Oak Ridge Reservation, GAAT Tank W-3
- FY 1998 Oak Ridge Reservation, GAAT Tank W-4

## Tank Waste Conveyance System

(OST Ref. No. 2116)

The Tank Waste Conveyance System combines a hose management system and a jet pump to retrieve sludges from the Department of Energy's radioactive waste storage tanks. Typically, these sludges are difficult to remove and convey. After a high-pressure water cutting jet loosens sludge from the tank bottoms the sludge is directed into a hose controlled by the Hose Management Arm. A jet pump then removes the sludge and liquids from the tanks. The entire system is moved around inside the tanks by a robotic arm or vehicle. Overview cameras in the tanks and cameras located on the robotic arm and vehicle provide equipment operators a view of the tank interiors and waste removal activities.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Oak Ridge, GAAT Tank W-4

**Project Name:** OR-43203, Bethel Valley Remedial Action, Gunite and Associated Tanks Treatability Study (GAATTS)

**Date of Deployment:** November 1997 -  
February 1998

**Technology User:** Lockheed Martin Energy  
Systems

**Deployment Value/Impact:** Under the GAATTS, Oak Ridge is removing sufficient waste from tanks to allow the tanks to be closed and enable progress on the restoration of the Bethel Valley watershed. The tank waste conveyance system provides the capability to move the retrieved waste out of the tank and into staging areas for treatment. To date sludge and debris have been removed from two 85,000 gallon tanks.

**Point of Contact:**

**User Program POC:**

Jacquie Noble-Dial, DOE-OR, (423) 241-6184

**OST Program POC:**

Ted Pietrok, DOE-RL, (509) 372-4546

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

- Waterjet Technologies Inc.
- Pacific Northwest National Laboratories

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$2,016

**Other Deployments:**

- FY 1997 Oak Ridge Reservation, GAAT Tank W-3
- FY 1998 Oak Ridge Reservation, GAAT Tank W-6

## Remote Underwater Characterization System (RUCS)

(OST Ref. No. 2151)

The Remote Underwater Characterization System (RUCS) is an underwater characterization system with the potential to perform tasks such as small parts retrieval and sampling. It is based on a small, commercially-available submersible vehicle. The submersible vehicle itself is approximately 12 inches long, 9 inches wide, and 6 inches tall. The small size of the vehicle allows it to operate in areas where access is tight or where maneuvering room is limited. The system is very inexpensive when compared to others of similar capability. The vehicle has underwater lights, a front color camera, and a rear black and white camera. It is operated over a 125' neutrally buoyant tether and is capable of operating at depths up to 100 feet. The Robotics Crosscutting Program is adding an on-board compass, a depth sensor, and a gamma radiation detector. An 'auto-depth' control feature is also being implemented to allow the vehicle to 'hover' at a user-selected depth.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Idaho National Engineering and Environmental Laboratory, TRA-660 Facility

**Project Name:** Idaho National Engineering and Environmental Laboratory (INEEL) Large Scale Demonstration and Deployment Project (LSDDP). PBS No. ID-ER-110 (0564)

**Date of Deployment:** August 1998

**Technology User:** Lockheed Martin Idaho Technology Company

**Deployment Value/Impact:** The demonstration, which became a deployment, took place in a canal containing two defueled test reactors at the INEEL TRA-660 facility. The remote underwater characterization system (RUCS) was used to visually survey the canal and its contents, and also to gather radiological characterization data on the reactors and equipment on the floor of the canal. The RUCS was simpler to deploy than the baseline approach of mounting underwater cameras or underwater radiation detectors to a cable or a long (15' - 20') reach rod. Use of the RUCS also reduced the number of personnel that had to be suited up in the canal area, which saves labor and reduces the potential for personnel exposure and contamination. Its small size and maneuverability allowed the RUCS to operate beneath overhead structures and behind the reactors, and it measured radiation levels 50% higher than previously known because of its ability to 'fly' right up to objects.

**Point of Contact:**

**User Program POC:**  
Chelsea Hubbard (DOE-ID) - 208-526-0645

**OST Program POC:**  
Steve Bossart (DOE-FETC) - 304-285-4643

### TECHNOLOGY DEVELOPMENT INFORMATION

#### Major Developers:

This technology was developed under the DOE Robotics Crosscutting Program primarily at the Idaho National Engineering and Environmental Laboratory

#### Funding Information: (\$ in Thousands):

Total Estimated Funding: \$356

#### Other Deployments:

The RUCS vehicle is scheduled for deployment at the INEEL test area north storage canal in December 1998.

## Concrete Spaller

(OST Ref. No. 2152)

The Concrete Spaller is a handheld concrete coating and removal system. The unit consists of a patented spalling bit, a hydraulic cylinder, and an electric hydraulic pump. The spalling bit is inserted into a predrilled 1-in-diameter hole and removes a concrete surface area of 7-16 inches in diameter. Depth of spalling varies from 2 inches at the pilot hole location to 1/8-inch at the edge of the spall. The Concrete Spaller is suitable for flat or slightly curved concrete walls and floors and can be used for radiological decontamination of large areas or hot spots. The Concrete Spaller was demonstrated at Hanford's C Reactor exhaust fan room for decontamination of two areas to free-release levels.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Hanford; Richland WA (105-C Reactor)

**Project Name:** RL-ER06; Decontamination & Decommissioning

**Date of Deployment:** February 1998

**Technology User:** Bechtel Hanford, Inc.

**Deployment Value/Impact:** Used to decontaminate two areas on the exhaust fan room wall, which had high-level radiation hot spots, to free-release levels as part of the 105-C Reactor Interim Safe Storage project.

**Point of Contact:**

**User Program POC:**

Ms. Shannon Saget (DOE/RL) - Tel. 509-372-4029

**OST Program POC:**

John Duda (DOE/FETC) - Tel. 304-285-4217

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

Pacific Northwest National Laboratory

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$124

**Other Deployments:**

No additional deployments have been identified.

## Compact Subsurface Investigation System

(OST Ref. No. 2153)

The Compact Subsurface Investigation System (Geoprobe Model 540), is a compact subsurface soil investigation system capable of retrieving soil samples. This system is a 31-in. wide unit, capable of sampling in congested areas that standard soil sampling equipment would not be able to fit into to conduct sample retrieval. The unit hydraulically hammers and/or pushes a metal sampling tube into soil and hydraulically withdraws the sample to the surface. The diameters of the typical sampling tubes are such that inner plastic sample holders are used that are 1.25-in. or 2-in. inside diameter. The length of sample that can be taken with each sample withdrawal is up to two ft. The Geoprobe Model 540 is equipped with two wheels and can be moved around similar to a cart. The unit is also connected with flexible hydraulic hoses to a remote hydraulic power unit.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Hanford; Richland, WA (105-C Reactor, Fuel Storage Basin)

**Project Name:** RL-ER06; Decontamination & Decommissioning

**Date of Deployment:** April 1998

**Technology User:** Bechtel Hanford, Inc.

**Deployment Value/Impact:** The Compact Subsurface Investigation System was deployed at Hanford's C Reactor Fuel Storage Basin. Five locations were sampled with a total of 11 samples taken and sent to the lab for chemical and radiological analysis. The system was able to take soil samples below concrete slabs where the baseline truck-mounted soil sampler was unable to access.

**Point of Contact:**

**User Program POC:**

Ms. Shannon Saget (DOE/RL) - Tel. 509-372-4029

**OST Program POC:**

John Duda (DOE/FETC) - Tel. 304-285-4217

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

Geoprobe

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$135

**Other Deployments:**

No additional deployments have been identified.

## Concrete Dust Suppression System

(OST Ref. No. 2154)

The Concrete Dust Suppression System consists of skid-mounted water tank and 8 HP, 580 psi gasoline-powered pump connected to an array of 6-8 water spray nozzles. The skid is permanently mounted on the back of a Caterpillar 375 excavator fitted with a hoe-ram. Pressurized output of the pump is connected by flexible hose to a U-shaped, spray-nozzle ring mounted on the demolition ram. The spray-nozzle ring is enclosed in 3-in. x 6-in. tube steel for protection and is mounted approximately 5-ft. away from the ram point. Water spray can be turned on and off by either foot or hand operation by the equipment operator as needed. Dust suppression water is held in a 540-gallon water tank and is CAM-LOT mounted on the tank supply side. The gasoline-powered pump is equipped with an electric starter and electric control valve for remote operation by the equipment operator.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Hanford; Richland, WA (105-C Reactor)

**Project Name:** RL-ER06; Decontamination & Decommissioning

**Date of Deployment:** April 1998

**Technology User:** Bechtel Hanford, Inc.

**Deployment Value/Impact:** The Concrete Dust Suppression System was used in a number of concrete demolition activities that occurred during the D&D of Hanford's C Reactor due to its success over the traditional baseline method in controlling the dust generated and in allowing a reduction in work force.

**Point of Contact:**

**User Program POC:**

- Ms. Shannon Saget (DOE/RL) - Tel. 509-372-4029
- Mr. Jeff Bruggeman (DOE-RL) - Tel. 509-376-7121

**OST Program POC:**

John Duda (DOE/FETC) - Tel. 304-285-4217

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

Rowand Machinery

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$137

**Other Deployments:**

No additional deployments have been identified.

## Portable Hi-Purity Germanium Detectors for Delineating Contamination in Soils

(OST Ref. No. 2157)

This Accelerated Site Technology Deployment (ASTD) project involves the integration, implementation, and deployment of four unique EM50 technologies in an effort to assist the DOE in meeting its accelerated remediation plan. The four technologies are 1.) the mobile radiation tracking (RTRAK) system; 2.) portable high-purity Germanium sensors for in situ gamma spectrometry; 3.) the Radiation Scanning System (RSS); and 4.) innovative new software packages that provide data analysis for decision support. For more information about this and other ASTD projects, go to the ASTD home page at [www.wastenot.inel.gov/tdi](http://www.wastenot.inel.gov/tdi) or <http://www.ead.anl.gov/nfemp/astd>.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Fernald Environmental Management Project, Area 2, Phase I FEMP #s 1, 2 & 3

**Project Name:** OH-FN-06 Fernald ASTD SCEP (Soils, Characterization and Excavation Project)

**Date of Deployment:** January 1998

**Technology User:** Fluor Daniel Fernald

**Deployment Value/Impact:** Considerable time and cost savings were attained by the use of the real-time technologies to evaluate and help manage the soil excavation process during the initial excavation activities in Area 2, Phase I. The completion of this initial Implementation Task was established on August 1, 1998. Ultimately, the deployment of these real time in situ radiological characterization instruments at Fernald across each of the soil remediation areas (areas 1 through part of 10) between FY98-FY06 is anticipated to reduce remediation cost by an estimated \$34 million.

**Point of Contact:**

**User Program POC:**

Robert Janke (DOE-FEMP) - Tel. 513-648-3124

**OST Program POC:**

Scott McMullin (DOE-SRS) - Tel. 803-725-9596

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

- FEMP
- ANL
- INEEL
- DOE-EML

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$1,092

**Other Deployments:**

- Deployed (type: DOE) in FY 1998 at FEMP (Area 2, Phase I FEMP #3) in Fernald, OH
- Deployed (type: DOE) in FY 1998 at FEMP (Area 2, Phase I FEMP #2) in Fernald, OH

## Segmented Gate System

(OST Ref. No. 2158)

The Segmented Gate System (SGS) uses a computer controlled mechanical sorter to separate suspected radioactive contaminated soil into clean and contaminated waste streams. This is accomplished by passing soil, via a conveyor belt, under two banks of sensors that will detect radionuclide concentrations above the desired limits based on the specific contaminant and regulatory requirements. This soil is then diverted into a separate waste stream for removal. The SGS is capable of using a variety of sensors required for specific contaminant detection (i.e., sodium iodide, calcium fluoride, or high purity germanium). The flexibility, sensitivity, and speed of the SGS has proven to be cost effective and significant volume reduction has been experienced. Sites scheduled for implementation include TRR as of 5/98, Ashtabula in 7/98, and West Valley in 10/98

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Pantex, Amarillo, TX

**Project Name:** AL-014 Pantex Site Remediation Project

**Date of Deployment:** March-April, 1998      **Technology User:** Mason & Hanger  
(Pantex M&O)

**Deployment Value/Impact:** Major cost savings was realized using this technology due to volume reduction.

**Point of Contact:**

**User Program POC:**

Mr. Doug Maynor (DOE-OH) - Tel. 937-865-3986

**OST Program POC:**

Jim Wright (DOE-SRS) - Tel. 803-725-5608

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

- Thermo-NUtech, Albuquerque, NM.
- EM-40

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$3,550

**Other Deployments:**

- Deployed in FY 1998 at Sandia National Lab (SNL) in Albuquerque, NM
- Deployed (type: DOE) in FY 1998 at Tonopah Test range (Nevada Test site) in Las Vegas, NV
- Deployed (type: DOE) in FY 1998 at Ashtabula (Ashtabula Soil Pile) in Ashtabula, OH



## Segmented Gate System

(OST Ref. No. 2158)

The Segmented Gate System (SGS) uses a computer controlled mechanical sorter to separate suspected radioactive contaminated soil into clean and contaminated waste streams. This is accomplished by passing soil, via a conveyor belt, under two banks of sensors that will detect radionuclide concentrations above the desired limits based on the specific contaminant and regulatory requirements. This soil is then diverted into a separate waste stream for removal. The SGS is capable of using a variety of sensors required for specific contaminant detection (i.e., sodium iodide, calcium fluoride, or high purity germanium). The flexibility, sensitivity, and speed of the SGS has proven to be cost effective and significant volume reduction has been experienced. The Segmented Gate System was developed by EM-40 and Thermo-NUtech. SCFA is now funding the project as an Accelerated Site Technology Deployment (ASTD). An implementation at Sandia National Lab was completed in September of 1998 and an implementation at Pantex was completed in April 1998. For more information on this and other ASTD projects, go to the ASTD home page at [www.wastenot.inel.gov/tdi](http://www.wastenot.inel.gov/tdi). Sites scheduled for implementation include TRR as of 5/98, Ashtabula in 7/98, and West Valley in 10/98. Additional FY 1999 deployments scheduled include Mound, INEEL, and BNL.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Sandia National Lab, SNL Site 16

**Project Name:** AL-018 Sandia ER Project

**Date of Deployment:** September 1998      **Technology User:** Thermo-NUtech, Albuquerque, NM.

**Deployment Value/Impact:** Major cost savings was realized using this technology due to 90% volumn reduction of contaminated soil.

**Point of Contact:**

**User Program POC:**

Mr. Doug Maynor (DOE-OH) 937-865-3986

**OST Program POC:**

James A. Wright (DOE-SR) 803-725-5608

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

Thermo-NUtech, Albuquerque, NM

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$3,550

**Other Deployments:**

- Deployed in FY 1998 at Pantex, Amarillo, TX
- Deployed (type: DOE) in FY 1998 at Tonopah Test range (Nevada Test site) in Las Vegas, NV
- Deployed (type: DOE) in FY 1998 at Ashtabula (Ashtabula Soil Pile) in Ashtabula, OH

## Segmented Gate System

(OST Ref. No. 2158)

The Segmented Gate System (SGS) uses a computer controlled mechanical sorter to separate suspected radioactive contaminated soil into clean and contaminated waste streams. This is accomplished by passing soil, via a conveyor belt, under two banks of sensors that will detect radionuclide concentrations above the desired limits based on the specific contaminant and regulatory requirements. This soil is then diverted into a separate waste stream for removal. The SGS is capable of using a variety of sensors required for specific contaminant detection (i.e., sodium iodide, calcium fluoride, or high purity germanium). The flexibility, sensitivity, and speed of the SGS has proven to be cost effective and significant volume reduction has been experienced.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Ashtabula, Ashtabula Soil Pile

**Project Name:** OH-AB-01 Remediation

**Date of Deployment:** July 1998

**Technology User:** Reactive Metals Inc.

**Deployment Value/Impact:** Major cost savings was realized using this technology due to the volume reduction.

**Point of Contact:**

**User Program POC:**

- Mr. Doug Maynor (DOE-OH) - Tel. 937-865-3986
- 

**OST Program POC:**

Scott McMullin (DOE-SR) Tel. 803-725-9596

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

- Thermo-NUtech, Albuquerque, NM
- EM-40

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$3,550

**Other Deployments:**

- Deployed (type: DOE) in FY 1998 at Sandia National Lab (SNL) in Albuquerque, NM
- Deployed (type: DOE) in FY 1998 at Pantex (Pantex) in Amarillo, TX
- Deployed (type: DOE) in FY 1998 at Tonopah Test range (Nevada Test site) in Las Vegas, NV

## CDI Remote Characterization System

(OST Ref. No. 2178)

The Canyon Disposition Initiative (CDI) remote characterization system is a robotic characterization platform for use in the 221-U facility at Hanford. It is designed for fully remote collection of characterization data such as gross gamma readings, video, and smear samples.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Hanford Site, 221-U Facility, Railroad Tunnel

**Project Name:** Canyon Disposition Initiative, PBS No. RL-ER06

**Date of Deployment:** August 1998

**Technology User:** Pacific Northwest  
National Laboratory

**Deployment Value/Impact:** Remote characterization of the railroad tunnel was required to collect data in support of the Canyon Disposition Initiative Record of Decision process for determining the final disposition of the facility. Personnel access has not been allowed for nearly 30 years.

**Point of Contact:**

**User Program POC:**

Mr. Dennis Brown (DOE-RL) Tel. 509-372-4030

**OST Program POC:**

John Duda (DOE-FETC) 304-285-4217

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

Pacific Northwest National Laboratory, Idaho National Engineering and Environmental Laboratory, Oak Ridge National Laboratory

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$672

**Other Deployments:**

No additional deployments have been identified.

## Shallow Fluted Auger

(OST Ref. No. 2230)

The shallow fluted auger is a 10-inch long, 1.8-inch diameter sampling tool with shallow pitched flutes used to obtain waste samples from hard heels located on the floors of radioactive waste storage tanks. The sampler is deployed through a tank riser where it can be directed to retrieve samples, via a sample sleeve, from any location on the tank floor. After retrieval from the tank, the sleeved auger samples are transferred to an on site transfer cask and transported to the Hanford building 222-S laboratory where they are analyzed in a hot-cell.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Hanford, Tank AX-104

**Project Name:** RL-TW04 Hanford Tanks Retrieval Project

**Date of Deployment:** November, 1997

**Technology User:** Project Hanford  
Management Company -  
Lockheed Martin  
Hanford Company

**Deployment Value/Impact:** With the successful sampling campaign at Tank AX-104, auger sampling using this new tool design has been reintroduced at the Hanford Site as a baseling sampling technology. The successful sampling campaign demonstrated for the first time that: 1) waste samples can be recovered from the deepest tanks (54 feet) with simple auger tools; 2) using a special riser adapter, two auger samples at different locations on the tank floor can be retrieved from a 6-inch riser. Previously, auger sampling had limited success in Hanford Tanks containing sludge, saltcake, and dry waste.

**Point of Contact:**

**User Program POC:**

Cathy Louie, DOE-RL, (509) 376-6834

**OST Program POC:**

Ted Pietrok, DOE-RL, (509) 372-4546

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

Lockheed Martin Hanford Company and Pacific Northwest National Laboratory

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$150

**Other Deployments:**

This technology has not been applied anywhere else.

## Soft-Sided Waste Containers

(OST Ref. No. 2240)

The Transport Plastics Inc. Lift Liner™ soft-sided waste packaging system includes a 25-mil woven and coated outer polypropylene fabric shell with a 40-mil high-density polyethylene inner liner. The outer shell is equipped with 18 lifting straps made of two-inch polyester seat belt webbing material. Each container has a capacity of 260 cf and holds up to 24,000 lbs, and meet Department of Transportation requirements for low specific activity and surface contaminated objects. The system also includes a loading frame used to support the shell and inner liner during loading and a lifting/spreader bar, which attaches to the lifting straps for hoisting the filled containers.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Pantex, Firing Site #5

**Project Name:** AL014 and AL015; Pantex Plant site Remediation Project and Pantex Waste Operations

**Date of Deployment:** September 1998

**Technology User:** Battelle

**Deployment Value/Impact:** The Soft-sided waste containers were used to package concrete and rebar generated from D&D of a concrete apron contaminated with depleted uranium at the Firing Site #5. Using this packaging system as a liner for roll-off boxes saved a considerable amount of money compared to transporting and disposing the debris in SeaLand containers. The packaged debris was shipped to Nevada Test Site for disposal. A report is currently being generated at Pantex, which will highlight the benefits of this technology.

**Point of Contact:**

**User Program POC:**

Mr. Johnnie Guelker (DOE Pantex Office) -  
Tel. 806-477-3183

**OST Program POC:**

Mr. Steve Bossart (DOE/FETC) - Tel. 304-285-4643

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

Transport Plastics, Inc.

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$27

**Other Deployments:**

Deployed (type: DOE) and Demonstrated (type: Full-Scale) in FY 1998 at INEEL (CFA-691) in Idaho Falls, ID

## Soft-Sided Waste Containers

(OST Ref. No. 2240)

The Soft-Sided Waste Containers, developed by Transport Plastics Inc. and marketed as the Lift Liner™ soft-sided waste packaging system, includes a 25-mil woven and coated outer polypropylene fabric shell with a 40-mil high-density polyethylene inner liner. The outer shell is equipped with 18 lifting straps made of two-inch polyester seat belt webbing material. Each container has a capacity of 260 cf and holds up to 24,000 lbs, and meet Department of Transportation requirements for low specific activity and surface contaminated objects. The system also includes a loading frame used to support the shell and inner liner during loading and a lifting/spreader bar, which attaches to the lifting straps for hoisting the filled containers.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** INEEL, CFA-691 Central Facilities Area Sewage Treatment Plant

**Project Name:** ID-ER-110; Decontamination and Dismantlement

**Date of Deployment:** August-November, 1998      **Technology User:** LMITCO

**Deployment Value/Impact:** The successful demonstration of the Soft-Sided Waste Containers at INEEL in August 1998 for demolition debris, led to the subsequent and rapid deployment at CFA-691. This technology has three times the capacity of metal waste box containers. Each container is \$380.00 per bag. There is a one-time cost of about \$7,000 for the loading frame and lifting/spreading bar. This system results in a savings of about \$1,100 in container cost for each bag that is filled vs. filling three metal boxes.

**Point of Contact:**

**User Program POC:**

Ms. Chelsea D. Hubbard (DOE-ID) - Tel. 208-526-0645

**OST Program POC:**

Steve Bossart (DOE/FETC) - Tel. 304-285-4643

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

Transport Plastics, Inc.

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$27

**Other Deployments:**

This technology was used at the Idaho Chemical Processing Plant for low-level radiologically contaminated soil in February 1998. The system was selected for demonstration in a D&D setting as part of the D&D Large-Scale Demonstration and Deployment project. The February 1998 deployment was not funded by OST.

## Decommissioning In-Situ Plutonium Inventory Monitor (DISPIM)

(OST Ref. No. 2241)

The Decommissioning In-Situ Plutonium Inventory Monitor (DISPIM™), developed and marketed by BNFL Instruments, uses passive neutron counting and 3-D imaging to perform in-situ assay of plutonium-contaminated equipment. The DISPIM™ system has lower sensitivity and greater accuracy than current on-site systems. Through the Accelerated Site Technology Deployment (ASTD) program, the DISPIM™ system is being deployed at the Site to provide a means to map accurately plutonium hold-up in process equipment awaiting D&D.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Rocky Flats Environmental Site, Building 771

**Project Name:** RF018; Building 771/774 Cluster Closure Project

**Date of Deployment:** September 1998      **Technology User:** Rocky Mountain Remedial Services

**Deployment Value/Impact:** The DISPIM was used to assay three items in FY98; a carpenter crate holding glovebox J-40, glovebox SR-14, and a raschig ring filled tank. The system performed as expected during this initial deployment. Based on the results, the DISPIM was purchased for continued deployment in FY99. The system will be used primarily as a D&D planning tool, but additional applications are being considered. Specific benefits of the DISPIM include identification of glovebox hot spots; more efficient planning and implementation of size reduction strategy; more efficient segregation of TRU vs. low level waste, reducing disposal requirements and cost; ensures exposure kept as low as reasonably achievable; and establishment of staff and PPE requirements.

**Point of Contact:**

**User Program POC:**

Mr. Gary A. Huffman (DOE-RF) - Tel. (303) 966-7490

**OST Program POC:**

John Duda (DOE/FETC) - Tel. 304-285-4217

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

BNFL Instruments

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$2,000

**Other Deployments:**

No additional deployments have been identified.

## Cogema 3-D Gamma Imaging

(OST Ref. No. 2302)

The Cogema three-dimensional Gamma Imaging provides precise information on the quantity and location of gamma radiation emitting sources. A three-dimensional model superimposed with gamma images can be developed by obtaining sufficient gamma images and corresponding visual images and then applying photogrammetric analysis. Gamma images are obtained using an ALADIN camera system. Visual images are obtained with video camera systems. The video images are integrated with the gamma images in producing two-dimensional images that can be used to develop three-dimensional models of the gamma distribution.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Hanford 221-U Facility

**Project Name:** RL-ER06; Decontamination & Decommissioning (Canyon Disposition Initiative)

**Date of Deployment:** September 1998

**Technology User:** Bechtel Hanford, Inc.

**Deployment Value/Impact:** Partial gamma and visual images were obtained using the 3-D Gamma Imaging System suspended over cell 28 in the 221-U Facility. Sensitivity of the 3-D Gamma Imaging System was not sufficient to complete work on the canyon deck, but the system does produce models that represent gamma radiation emissions in three dimensions when gamma emissions exceed 1R/hr at a distance of 10 feet. This standoff capability helps avoid worker exposure in radioactive environments.

**Point of Contact:**

**User Program POC:**

Mrs. Shannon N. Saget (DOE-RL) - Tel. 509-372-4029

**OST Program POC:**

Mr. John Duda (DOE/FETC) - Tel. 304-285-4217

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

Cogema Engineering

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$141

**Other Deployments:**

No additional deployments have been identified.



## Track Mounted Shear/Crusher

(OST Ref. No. 2303)

The Track-Mounted Shear/Crusher is an automated demolition system capable of performing multiple dismantlement and demolition operations using a variety of end-effector tools. The Track-Mounted Shear/Crusher was used for a variety of demolition activities during the D&D of five structures at Fernald in FY98. These activities included demolition of building 24B Railroad Engine House and segmentation of the steel superstructure at building 3G, Refrigeration Building, following removal of the transite siding.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Fernald, Buildings 38A, 38B, 24B

**Project Name:** OH-FN-01; Facility Shutdown and OH-FN-02; Facility D&D

**Date of Deployment:** August-September, 1998      **Technology User:** Fluor Daniel Fernald and FEMP D&D subcontractors

**Deployment Value/Impact:** The Track-Mounted Shear/Crusher supported D&D of three structure. Using this remote-controlled system resulted in cost and schedule savings, as well as increased safety to workers. The system provided a 25% increase in productivity for both cutting and concrete demolition/removal compared to baseline techniques.

**Point of Contact:**

**User Program POC:**

Mr. Robert F. Danner (DOE/FN) - Tel. 513-648-3167

**OST Program POC:**

Harold Shoemaker (DOE/FETC) - Tel. 304-285-4715

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

John Deere, Pemberton & Tiger Mfg.

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$449

**Other Deployments:**

- Deployed (type: DOE) in FY 1998 at Fernald (Complex 25; Sewage Treatment Plant and Incinerator) in Fernald, OH
- Deployed (type: DOE) in FY 1998 at Fernald (Buildings 3F,3G) in Fernald, OH
- Deployed (type: DOE) in FY 1998 at Fernald (Waste Management Operating Unit) in Fernald, OH
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## Track Mounted Shear/Crusher

(OST Ref. No. 2303)

The Track-Mounted Shear/Crusher is an automated demolition system capable of performing multiple dismantlement and demolition operations using a variety of end-effector tools. The Track-Mounted Shear/Crusher was used for a variety of demolition activities during the D&D of Complex 25. Specific activities included dismantlement of structural steel, concrete dismantlement and crushing and metal size reduction.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Fernald, Complex 25; Sewage Treatment Plant and Incinerator

**Project Name:** OH-FN-02; Facility D&D

**Date of Deployment:** July - August 1998      **Technology User:** Fluor Daniel Fernald and FEMP D&D subcontractors

**Deployment Value/Impact:** The Track-Mounted Shear/Crusher supported D&D of of Complex 25 in FY98. This area includes the Fernald Sewage Treatment Plant and Incinerator. The Track-Mounted Shear/Crusher was used for demolition and segmentation of the steel frames for the building. Other smaller structures were also decommissioned using this technology including the chlorination and sludge drying facilities. Using this tool saved the site \$96 thousand in rental fees since the technology had been purchased as part of the ASTD. This remote-controlled system resulted in cost and schedule savings, as well as increased safety to workers. The system provided a 25% increase in productivity for both cutting and concrete demolition/removal compared to baseline techniques.

**Point of Contact:**

**User Program POC:**

Mr. Robert F. Danner (DOE/FN) - Tel. 513-648-3167

**OST Program POC:**

Harold Shoemaker (DOE/FETC) - Tel. 304-285-4715

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

John Deere, Pemberton & Tiger Mfg.

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$449

**Other Deployments:**

- Deployed (type: DOE) in FY 1998 at Fernald (Buildings 38A, 38B, and 24B) in Fernald, OH
- Deployed (type: DOE) in FY 1998 at Fernald (Buildings 3F,3G) in Fernald, OH
- Deployed (type: DOE) in FY 1998 at Fernald (Waste Management Operating Unit) in Fernald, OH

## Track Mounted Shear/Crusher

(OST Ref. No. 2303)

The Track-Mounted Shear/Crusher is an automated demolition system capable of performing multiple dismantlement and demolition operations using a variety of end-effector tools. The Track-Mounted Shear/Crusher was used for a variety of demolition activities during the D&D of five structures at Fernald in FY98. These activities included demolition of building 24B Railroad Engine House and segmentation of the steel superstructure at building 3G, Refrigeration Building, following removal of the transite siding.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Fernald, Buildings 3F,3G

**Project Name:** OH-FN-01; Facility Shutdown and OH-FN-02; Facility D&D

**Date of Deployment:** August/September 1998

**Technology User:** Fluor Daniel Fernald and FEMP D&D Subcontractors

**Deployment Value/Impact:** The Track-Mounted Shear/Crusher supported D&D of two structures. Using this remote-controlled system resulted in cost and schedule savings, as well as increased safety to workers. The system provided a 25% increase in productivity for both cutting and concrete demolition/removal compared to baseline techniques.

**Point of Contact:**

**User Program POC:**

Mr. Robert F. Danner (DOE/FN) - Tel. 513-648-3167

**OST Program POC:**

Harold Shoemaker (DOE/FETC) - Tel. 304-285-4715

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

John Deere, Pemberton & Tiger Mfg.

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$449

**Other Deployments:**

- Deployed (type: DOE) in FY 1998 at Fernald (Complex 25; Sewage Treatment Plant and Incinerator) in Fernald, OH
- Deployed (type: DOE) in FY 1998 at Fernald (Buildings 38A, 38B, 24B) in Fernald, OH
- Deployed (type: DOE) in FY 1998 at Fernald (Waste Management Operating Unit) in Fernald, OH
-

## Track Mounted Shear/Crusher

(OST Ref. No. 2303)

The Track-Mounted Shear/Crusher is an automated demolition system capable of performing multiple dismantlement and demolition operations using a variety of end-effector tools. The Track-Mounted Shear/Crusher was used for a variety of demolition activities during the D&D of five structures at Fernald in FY98. These activities included demolition of building 24B Railroad Engine House and segmentation of the steel superstructure at building 3G, Refrigeration Building, following removal of the transite siding.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Fernald, Waste Management Operating Unit

**Project Name:** OH-FN-02, Facility D&D

**Date of Deployment:** July/August 1998

**Technology User:** Fluor Daniel Fernald

**Deployment Value/Impact:** The Track Mounted Shear/Crusher was deployed as part of the Waste Management Projects involving the Waste Management Operating Unit. The Track Mounted Shear/Crusher was used to size reduce cars and various scrap metal pieces that were in the Waste Management Operating Unit. The pieces were moved to Plant 1, where the size reduction took place. Benefits provided by the Shear/Crusher were that it was faster and cheaper than the baseline technologies. Safety was also improved due to the decrease in manual rigging and cutting of the pieces by the workers.

**Point of Contact:**

**User Program POC:**

Mr. Robert Danner (DOE/FN) - Tel. 513-648-3167

**OST Program POC:**

Harold Shoemaker (DOE/FETC) - 304-285-4715

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

John Deere, Pemberton & Tiger Mfg.

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$449

**Other Deployments:**

- Deployed (type: DOE) in FY 1998 at Fernald (Complex 25; Sewage Treatment Plant and Incinerator) in Fernald, OH
- Deployed (type: DOE) in FY 1998 at Fernald (Buildings 38A, 38B, 24B) in Fernald, OH
- Deployed (type: DOE) in FY 1998 at Fernald (Buildings 3F,3G) in Fernald, OH

## Hand Held Shear

(OST Ref. No. 2304)

The Hand Held Shears, marketed by Res Q Tek, Inc., are operated using 100V AC electric power units which drives a hydraulic pump reservoir. The hydraulic pump is rated at 10,000 psi, but for extended life, will operate at 5,000 psi. The system deployed at Fernald is portable and included a variety of cutting end-effectors. These included two oval ('O') blade cutters and one straight blade cutter for cutting various diameters of piping and flat stock, respectively. In addition the system included an articulating head mini-cutter for cutting materials in difficult to access situations.. The advantages of the Code 3 Res Q Tool Hand Held Shears are their portability and adaptability to difficult access area operations. For example, the shears can cut pipes that are attached to walls without first having to loosen the pipe hangers. Another feature of the Hand Held Shears is their ability to crimp piping during cutting so that the pipe contents are contained.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Fernald, Buildings 38A, 38B, 24B

**Project Name:** OH-FN-01; Facility Shutdown and OH-FN-02; Facility D&D

**Date of Deployment:** August-September, 1998  
**Technology User:** Fluor Daniel Fernald and FEMP D&D subcontractors

**Deployment Value/Impact:** The hand held shears were used to size reduce pipining and conduit up to 3 inches in diameter during D&D of three buildings at Fernald in FY98. The technology reduced radiation and lead exposure, lowered cost compared to baseline technology and accelerated schedules by cutting 20% faster than baseline.

**Point of Contact:**

**User Program POC:**

Mr. Robert F. Danner (DOE/FN) - Tel. 513-648-3167

**OST Program POC:**

Harold Shoemaker (DOE/FETC) - Tel. 304-285-4715

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

Res Q Tek, Inc.

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$5

**Other Deployments:**

No additional deployments have been identified.

## OSS Salt Sampler

(OST Ref. No. 2308)

The OSS Salt Sampler uses a lightweight, segmented mast equipped with a sample cylinder. The mast design allows the sampler to be assembled, then lowered to the proper depth inside the tank. The sample cylinders are designed to scrape and vacuum or cut core samples from the salt waste surface.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** SRS, Tank 16H

**Project Name:** PBS SR-HL12 HLW Removal, Tank 16H Isolation and Closure

**Date of Deployment:** June 1998

**Technology User:** Westinghouse  
Savannah River  
Company

**Deployment Value/Impact:** The Salt Sampler was deployed in Savannah River Site Tank 16H, where it gathered many salt samples from several different tank locations. Salt samples are an important part of preclosure waste characterization and provide critical data to support tank closure decisions and analyses.

**Point of Contact:**

**User Program POC:**

Tom Gutmann, DOE-SR, (803) 208-7408

**OST Program POC:**

Ted Pietrok, DOE-RL, (509) 372-4546

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

Oceaneering Space Systems, under contract with the Federal Energy Technology Center, developed the sampling system.

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$100

**Other Deployments:**

This technology has not been applied anywhere else. It is related to technology developed as part of TMS ID 278.

## Barometric Pumping/ Baro Ball

(OST Ref. No. 2331)

Barometric pumping removes volatile organic compounds from the soil by taking advantage of changes in barometric pressure above and below ground. When the subsurface pressure is higher, contaminants naturally move upward where they can be treated/released. The Baroball significantly increases the effectiveness of barometric pumping by preventing the inflow of air into a venting well when atmospheric pressures reverse, a condition that can reduce contaminant removal by diluting and discharging the pollutant. Its design consists of a simple plastic sphere that seals the well from incoming surface air.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Savannah River, Metallurgical Laboratory Basin

**Project Name:** Met Lab

**Date of Deployment:** September 1998

**Technology User:** Savannah River  
Technology Center

**Deployment Value/Impact:** The Baroball significantly increases the effectiveness of barometric pumping by preventing the inflow of air into a venting well when atmospheric pressures reverse and can be installed by using a cone penetrometer truck (CPT). Baroballs are potentially applicable to any site where VOCs are present in the unsaturated zone.

**Point of Contact:**

**User Program POC:**

Brian D. Riha (WSRC) - Tel. 803-557-7807

**OST Program POC:**

James A. Wright (DOE-SR) - Tel. 803-725-5608

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

- Savannah River Technology Center
- University of Waterloo (BaroBall)

**Funding Information: (\$ in Thousands):**

Total Estimated Funding \$0.0

**Other Deployments:**

No Other deployments have been identified.

# Oceaneering Space Systems Tank Sampling and Inspection Tool

(OST Ref. No. 2359)

The Oceaneering Space Systems Tank Sampling and Inspection Tool uses a lightweight, segmented mast equipped with a sample cylinder. The mast design allows the sampler to be assembled, then lowered to the proper depth inside the tank. The sample cylinders are designed to scrape and vacuum (the Vacuum Scarifying Sampling Tool Assembly, VSSTA), or cut core samples (Core Sampling tool) from the salt waste surface.

## DESCRIPTION OF THE DEPLOYMENT

**Location:** Savannah River Site, Tank 16H

**Project Name:** PBS SR-HL12 HLW Removal, Tank 16H Isolation and Closure

**Date of Deployment:** June, 1998

**Technology User:** Westinghouse  
Savannah River  
Company

**Deployment Value/Impact:** The Vacuum Scarifying Sampling Tool Assembly (VSSTA) and the Coring Sampling tool were deployed in Tank 16H, a 1.0 million gallon high level waste tank that had leaked waste into its annulus in the past. The VSSTA was used to retrieve samples for analysis of the residual liquid on the tank bottom left over from cleaning efforts. The Coring Sampling tool was used to retrieve samples from several locations in the annulus of the tank.

**Point of Contact:**

**User Program POC:**

Mr. Thomas S. Gutmann (DOE-SRS) - (803)  
208-7408

**OST Program POC:**

Mr. Robert C. Bedick, DOE-FETC, (304) 285-  
4505

## TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

Oceaneering Space Systems, Inc., Houston, TX

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$353

**Other Deployments:**

First-time deployment of this technology.



## Hydrophobic Lance

(OST Ref. No. 2360)

The Hydrophobic Lance is an innovative technology for recovery of pure phase DNAPL. This technology operates by placing a neutral/hydrophobic surface (Teflon) in contact with the DNAPL. The presence of the hydrophobic surface changes the in situ conditions experienced by the DNAPL, allowing it to selectively drain to a sump from which it can be recovered by pumping.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** Savannah River Site, M-Area Settling Basin

**Project Name:** PBS# ?, Savannah River

**Date of Deployment:** July 1998

**Technology User:** Westinghouse  
Savannah River  
Company

**Deployment Value/Impact:** The Hydrophobic Lance is thus a low-cost, passive technology to collect DNAPL from the strategically selected sites expected or confirmed to have DNAPL. The design and operation of the Lance require DNAPL continuity for flow to occur. It, therefore, represents a good preliminary option to reduce DNAPL saturation prior to implementing more aggressive and high-cost technologies. Collection of even small amounts of DNAPL can save years of pump-and-treat operation because of the generally low solubility of DNAPL components. In addition, draining DNAPL until it becomes discontinuous will make the DNAPL more accessible for destruction using aggressive technologies such as Fenton's chemistry.

**Point of Contact:**

**User Program POC:**

- Kathy Lewis (WSRC) Tel. 803-952-6532
- Les Germany (DOE-SR) Tel. 803-725-8033

**OST Program POC:**

James Wright (DOE-SR) Tel. 803-725-5608

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

Westinghouse Savannah River Company

**Funding Information: (\$ in Thousands):**

Total Estimated Funding \$0.0

**Other Deployments:**

This is the first deployment of this technology.

## Radiation Tracking System (RTRAX)for Delineating Contamination in Soils

(OST Ref. No. 2361)

This Accelerated Site Technology Deployment (ASTD) project involves the integration, implementation, and deployment of four unique EM50 technologies in an effort to assist the DOE in meeting its accelerated remediation plan. The four technologies are 1.) the mobile radiation tracking (RTRAK)system; 2.) portable high-purity Germanium sensors for in situ gamma spectrometry; 3.) the Radiation Scanning System (RSS); and 4.) innovative new software packages that provide data analysis for decision support. For more information about this and other ASTD projects, go to the ASTD home page at [www.wastenot.inel.gov/tdi](http://www.wastenot.inel.gov/tdi) or <http://www.ead.anl.gov/nfemp/astd>.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** FEMP, Area 2, Phase I FEMP #s 1, 2 & 3

**Project Name:** OH-FN-06 Fernald ASTD SCEP (Soils, Characterization and Excavation Project)

**Date of Deployment:** January 1998

**Technology User:** Fluor Daniel Fernald

**Deployment Value/Impact:** Considerable time and cost savings were attained by the use of the real-time technologies to evaluate and help manage the soil excavation process during the initial excavation activities in Area 2, Phase I. The completion of this initial Implementation Task was established on August 1, 1998. Ultimately, the deployment of these real time in situ radiological characterization instruments at Fernald across each of the soil remediation areas (areas 1 through part of 10) between FY98-FY06 is anticipated to reduce remediation cost by an estimated \$34 million.

**Point of Contact:**

**User Program POC:**

Robert Janke (DOE-FEMP) - Tel. (513) 648-3124

**OST Program POC:**

Scott McMullin (DOE-SR) - Tel. (803) 725-9596

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

- FEMP
- ANL
- INEEL
- DOE-EML

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$1,091

**Other Deployments:**

This is the first deployment for this technology.

## RSS Software for Soil Excavation Control for Delineating Contamination in Soils

(OST Ref. No. 2362)

This Accelerated Site Technology Deployment (ASTD) project involves the integration, implementation, and deployment of four unique EM50 technologies in an effort to assist the DOE in meeting its accelerated remediation plan. The four technologies are 1.) the mobile radiation tracking (RTRAK) system; 2.) portable high-purity Germanium sensors for in situ gamma spectrometry; 3.) the Radiation Scanning System (RSS); and 4.) innovative new software packages that provide data analysis for decision support. For more information about this and other ASTD projects, go to the ASTD home page at [www.wastenot.inel.gov/tdi](http://www.wastenot.inel.gov/tdi) or <http://www.ead.anl.gov/nfemp/astd>.

### DESCRIPTION OF THE DEPLOYMENT

**Location:** FEMP, Area 2, Phase I FEMP #s 1, 2 & 3

**Project Name:** OH-FN-06 Fernald ASTD SCEP (Soils, Characterization and Excavation Project)

**Date of Deployment:** January 1998

**Technology User:** Fluor Daniel Fernald

**Deployment Value/Impact:** Considerable time and cost savings were attained by the use of the real-time technologies to evaluate and help manage the soil excavation process during the initial excavation activities in Area 2, Phase I. The completion of this initial Implementation Task was established on August 1, 1998. Ultimately, the deployment of these real time in situ radiological characterization instruments at Fernald across each of the soil remediation areas (areas 1 through part of 10) between FY98-FY06 is anticipated to reduce remediation cost by an estimated \$34 million.

**Point of Contact:**

**User Program POC:**

Robert Janke (DOE-FEMP) - Tel. (513) 648-3124

**OST Program POC:**

Scott McMullin (DOE-SR) - Tel. (803) 725-9596

### TECHNOLOGY DEVELOPMENT INFORMATION

**Major Developers:**

- FEMP
- ANL
- INEEL
- DOE-EML

**Funding Information: (\$ in Thousands):**

Total Estimated Funding: \$1,092

**Other Deployments:**

This is the first deployment for this technology.